Development of Career & Teaching-Learning Environment in Higher Education

Concepts & Applications

Edited by:
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Prof. Ajith Jayaweera

Staff Development Center
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Preface and Acknowledgment

Development of high-quality educators depends upon, amongst other aspects, the richness of learning and teaching environment and practices. The scope of staff development programs offered by the WUSL are, therefore, expected to be widened to include not only academics, but also non-academic staff. We strongly believe that the numerous publications that the SDC has published in the past few years, and the training programs that we have completed continuously, helped them to gain knowledge, skills, right attitudes and a mindset in a wide array of subjects and in many different disciplines, including organizational management, human resource management, education technology, curricular development, lesson planning, teaching & training methods, assessment methods, use of ICT tools in education, student and academic counseling, soft skills, social and ethnic harmony, personality development and so on. Powerful career and professional development can, in fact, transform higher education institutes into places where both educators and students are deeply engaged in learning and making meaning of their lives. To be effective in which, professional development must provide teachers with a way to directly apply what they learn to their teaching.

With all these in mind, this book is arranged in a manner, where the readers will be equipped with the concept and applications in many areas that we did not talk earlier through our published work. Together, all these would help to have a better tomorrow for our

students who will be moving into a rapidly changing world of science and technology, commerce, and arts.

A very special allusion and thanks extended to those academic staff members, who worked determinedly to make this publication a reality, including **Dr. Ananda Chandrasekara, Mr. Lahiru Udayanga, Ms. Nirma Subashini, Ms. E.A.C. Dilrukshi and Ms. B.A.C.H. Wijesinghe**. Among many who have supported us throughout the process, we are most thankful to **Dr. H.A.C.K Jayathilake**, **Mr. W. D Samanwickrama**, **Ms. Maheshi Anupama, Ms. Dilini Sirimanna, Mr. Kapila Ranaraja, Mr. H.A.A. Dharmapriya** and **Ms. R. D. I. Shanthilatha** for their untiring efforts to make sure that entire process is functioning smoothly.

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Traits of an Ideal Academician and Her Role in National Development

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Introduction

Academicians, especially university lecturers, perform a leading character in the teaching process. Often their roles are defined with the sense of leading and establishing the educational processes. Academician's role does not end at the teaching level yet includes contributions in research and administrative affairs within the educational system. Moreover, they serve as consultants with their expertise, not only in the university research teams &their individual research projects, but also at national level for the development of the country. These vital roles of academicians have received an increasing attention globally as a key element in the progression of teaching and learning, by considering their significant role in the transfer of knowledge to students. However, many constituents of this process depend on attributes and professional characteristics of academicians, which pave the path for their important roles.

It is very essential to identify the key roles played by academicians, especially those who are attached to

higher educational institutes. Apart from their main duties of preparation and delivering the lectures, developing assessment criteria and conducting assessments, it is important to address student issues and engage in student counselling. Especially, Lecturers have a major responsibility in identifying probable complications faced by students in the learning process and taking essential steps to resolve such complications. Constructing a course review or an evaluation and analyzing the performance of both lecturer and students remain as an important step in teaching and learning.

The ideal academician works tirelessly to develop an inspiring environment for their learners. Good teaching not only impart knowledge and develop skills of learners, but also reflects the attitudes of the teachers toward their students, subject, and the specific activity. These attitudes may often result a lot of discussion about the concept of "academic freedom". Unfortunately, a fair number of people have realized academic freedom as nothing more than a justification to remain idle or to do irrelevant work.

Academicians are at their best when they motivate students to become active learners with their own will. Good lectures are well organized and deliver teaching contents clearly with variations and student involvement. However, there is no single criteria for characterizing effective lectures.

However, there are certain critical elements in lectures that may be used to increase teaching and learning effectiveness of lecturers in any discipline. Finally, the

criterion for determining the effectiveness is mainly based on the student outcome, specifically, with respect to the quality of the student learning that takes place.

An ideal academia is more than just a door of knowledge. A dynamic learning experience symbolize the ability of an academician to initiate learning and create an environment that flashes active participation. The aim of this article is to identify the traits of an ideal academician with the sense of their role in national development.

Characteristics of an Ideal Academician

Milton Hildebrand and Kenneth Feldman have clearly defined the following eight (08) characteristics of an ideal academician, who can be considered as "great lecturers" by not only their students, colleagues but also by administrators.

1. Stimulating Style

An ideal academician always wants to be an enthusiastic, self-motivated person who enjoy teaching by delivering the affection of the field. Hence the lecturer can create a fascinating environment for learning. The lecturer can make presentations in different styles, which are motivating and involving humor to help maintain attention of students, while emphasizing all key points with a meaningful example or illustration. Further ideal academician can create stimulating lectures by relating subject matter to the student's world as actual experience in real life.

2. Ability to Communicate Clearly

The second important ability of an ideal academician is to convey the information in a clear and logical manner. Hence lecturer needs to be capable of presenting all the knowledge of related to theory, principles, and concepts into practical applications in the simplest form. Answering the questions of students completely and freely and obtaining comprehensive feedback which helps to improve them, are essential traits of a model academician.

3. Well Prepared and Organized

Third considerable component for perfect lecturing is preparedness of the lecturer. An ideal lecturer needs to plan his/her teaching not only for the semester, but for the entire unit and also for the week, if possible, on a daily basis, which enables to use the time effectively and efficiently. Students need to have access to the syllabus, which contains intended learning outcomes (ILO's), objectives, assignments, laboratory reports, test schedules, special requirements, examinations and grading.

4. Dynamic Enthusiasm

Dynamic enthusiasm creates a wide meaning for ideal academia. He must always prepare for teaching and demonstrations. It depicts his attitudes and deep interest in the subject matter. Development of one's own unique style of humanism, creates a big picture in the field. He must always be knowledgeable in the

content area and devoted to the field of his specialty. Once the lecturer is in dynamic enthusiasm, it makes learning a pleasant experience. Further enthusiasm and excitement always lead to improvement of student attitudes toward both the subject and the lecturer. This interest can lead to an extra step to motivate the scholars to do all what is necessary to study. This always projects a positive approach toward life in general for both students and teachers with the ultimate objective of focusing on national development.

5. Personal Interest in Students

A supreme academic deliver lectures, while valuing ideas, opinions and questions of each student. Further he communicates with his students both in and out of the lecture room to know the students and their needs conveying this helping, caring attitude. Hence, they feel not only safe to express their views to students, but also learn to respect and pay attention to others. So, this characteristic creates a friendly learning environment for all students, who get advised on different aspects other than class problems.

6. Interactive Skills

Interactive skills can be used in several different ways. Certain, interactive skills involve a two-way interaction between the lecturer and the students, while others may refer to increased conversation among the students. Interaction can also refer to a student's participation with the material or the content of a lecture. However, in all cases, interactive skills imply active involvement

by the audience so that pupils no longer remain passive in the learning process.

Communication skills of the academic also implies a different way of approaching in the lecturer's role. In providing this way of presentation, the" instructor" often becomes a" facilitator", who must modify the lecture content to permit discussion and to attempt practicing of new techniques.

Further, interactive skills enable a lecturer to identify student needs and to keep up-to-date with individual development of students. It is important to give recommendations for successful performance to motivate future learning.

The interactive lecturing promotes the following characteristics of effective learning, in particular:

- Active involvement
- Increased attention and motivation
- A "different" kind of learning
- Feedback to the teacher and the student

Most commonly used interactive techniques by an ideal academician are, dividing the class into smaller groups, questioning the audience from time to time, responding to the queries of the audience, organizing debates, reaction panels and guests and using simulations and role play. However, using Learning Management System (LMS) and video tapes, audio visual aids, using effective presentation skills are other beneficial techniques that can be used to interact with the students effectively.

7. Flexibility, Creativity and Openness

The most regularly declared personal attribute of the highly graded lecturers, is their "easy going", "relaxed" or "open" manner, which create a relaxed environment in the classroom. Students really esteem appropriate humor, as an approach which propose that learning is enjoyable. Professionally independent and curious, creative academics are mindful of themselves as creative beings, although for some this may be a comparatively novel vision. They model, demonstrate and afford a questioning posture and build connections, with a marked degree of independence and rights in the process. Further, they value and nurture originality and the novel generation as well as evaluation of ideas. Recognizing and training personal creativity seems to be an important part of ideal academic's professional and personal meaning-making. Hence, being a good teacher and a creative person is one emphasis and a goal of an excellent academic.

8. Sound Character

It is also encouraging to note that, even small changes are frequently enough to hold attention a little better or put a clue across subject matter more clearly. An Academic simply must believe in himself and work at becoming the best teacher possible, considering his/her individual characteristics. The superlative academic maintains reliability and honesty in all connections with students and make sure all these are only up-front with all rules, regulations, and special requirements with no hidden expectations. Hence the lecturer does not change

the rules without rational justification to avoid negative impacts on students. Especially he is fair enough to show great care and fairness in grading and testing, while maintaining confidentiality.

At University level, students will use their own motivation and discipline, and offer their own, already advanced intellectual abilities to tolerate the subject matter. However, the lecturer still has a vital and challenging role to play in the process of student learning, by developing a context in which aspirations and skills of the students to learn can work most successfully.

Contribution of an Academician in National Development

Any academic involved in higher education in the country has a critical role to perform in developing and evolving the national education system, through generation and dissemination of research information in different areas such as curriculum, primary and secondary teacher training, effective reading, quality of teaching and learning, gender equity, education management, policy and planning for the national development etc.

Though the academia of higher education is small in number, it directly influences all other levels as well as sectors of national development, as the only source of skilled professionals, administrators and leaders. An outstanding academic has a core function of research. These research missions assist generation of knowledge,

scientific and other inventions that are critical for both national education and national improvement. Yet, considerations on the quality, significance and usefulness of the research in relation to further levels of national education, development and international research programmes, have remain as major issues in Sri Lanka.

Today a large part of the young generation has enrolled for higher education. Universities have converted into mass establishments in modern society, especially in highly developed countries, though this is less true for certain developing countries. There are five main functions, which a society intends to be fulfilled by the people engaged in higher education.

Firstly, provision of education and training within a frame, which collaborates research and teaching. Secondly, an ideal academic should provide professional training. Thirdly, people from these kinds of higher educational centres and research establishments, should be accountable for carrying out research in a wide range of disciplines, together with increasing amount of interdisciplinary effort, while training a continuous supply of qualified people for all fields in the industry. Fourthly, academics have a part to play in regional development and in emerging world-wide contacts. And fifthly, they have a social task in promoting the intellectual and social progress of the society.

In any educational system, the lecturer must contribute for the significant function of continuing society's heritage and stimulating human resources in the

direction of social development. This is evident from the fact that the academia is an important variable in the teaching-learning circumstances. His knowledge, abilities and attitude are involved in making the surroundings for learning. Certainly, it is realistic to say that lecturers have a high impact on the future of young people than other fellows involved in other occupations. Lecturers can be identified as "the initiator of the learning process, the facilitator of learning skills, the coordinator of learning sequence and indeed the key element in the whole education development". This makes the academia, the most challenging determinant of quality learning.

The social task of higher education depends on quality of this knowledge. Therefore, excellence need to be the key objective of any establishment of higher education, together with universities. If these personnel hope to maintain their traditional role as critics and servants of society, they essentially should maintain excellence in the knowledge and training that they convey.

This may be accomplished in several ways such as, through training of first-class minds capable of encouraging and leading the society and resulting improvements in science and technology. Meanwhile the results of research, can dramatically transform the day-to-day life of people to be better or worse, while providing the ability to rapidly reply to the speedy needs of national manpower or to stimulate an interest in learning and in its achievements for new customers such as adults.

To realize its comprehensive potential, higher education must implement a more self-motivated approach. In fact, it must take on an active stand, in terms of fulfilling the needs of society. An academic from higher educational organizations needs to become symbols of quality, while assuring the applicability of their knowledge for national development. Accordingly, an ideal academic will be able to maintain his role as the real focal point of knowledge and applications of his expertise. In addition, it is necessary to rejuvenate the partnership among the academic community and different sectors involved in the cooperation process as decision-makers, both international and national donors and NGOs.

From time to time, these become opponents rather than partners, especially in situations that obstruct national development. Corporate discussions and efforts are necessary to guarantee the mutual understanding. This will lay a long-standing basis for the strengthening of higher education for development of all countries worldwide, not only nation wise but also globally.

In conclusion, academics from higher education play a major role in national development and hence there is a necessity for increased investment in higher educational research on long-term basis. Further, it is important to strengthen research capacity by developing programs and activities, which are relevant. At the global level, it will be beneficial to create a network as national, regional, and global to promote research, which is needed to build support for research capability.

Further, assurance of adequate supply of funds and facilities will assist making of graduates, who can be self-determining researchers as well as competitive characters internationally which directly effects national development. Provision of access to research facilities such as laboratories, information and communication technologies, internet, web, training centers and digital libraries will enable the building-up of confident people. Setting up of national groups of people on research to support, monitor, evaluate and facilitate dissemination and publication of research will also help to maintain the needs as a nation.

Enhancing Student Involvement in Distance Learning through Support Services

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Introduction

Since the ancient time, teacher-teaching and student-listening have been considered as the primary mode of education. They used to gather at a specific location at a specific time, which was pre-determined. This arrangement immensely altered with the invention of educational delivery mechanisms powered by telecommunication and technological developments. Prevailed temporal and geographical constraints for education were removed consequently by allowing students to make their learning decisions as what to learn, where to learn and how to learn. The physical face of academic establishments was also altered and online classes, study material and libraries became more popular among community.

This resulted in proliferation of study programmes based on Distance Education (DE) platform. As the name stipulates, DE is a system of education or process of providing education or any instructional arrangement where teacher and student are geographically dispersed hence teaching behaviours are executed apart from learning behaviours. Importantly,

there is a gap between the teacher and the student where student is isolated and bear self-responsibility towards academic activities. Students are provided with relevant study material and information to enable them to work by themselves. Therefore, they can study at their own time, at the place of their choice and without face to face contact with teachers and peers.

On the other hand, from the earliest days, the rationale of DE has been to open opportunity for learners to pursue higher studies regardless of geographic, socio-economic or other constraints. Thus, a significant diversity in terms of age, family responsibilities, employment, aims and intentions among students is visible in DE system comparing to conventional education system. These characteristics are unique to the DE system hence they demand for special course designing techniques, organizational as well as administrative arrangements.

Considering the Sri Lankan context, the Open University of Sri Lanka (OUSL) is the pioneer in DE which has an ever-increasing demand and popularity for its study programmes since the inception. Other than the OUSL, there are multiple institutes attached to state and private universities offering distance-based study programmes in different disciplines. Despite the demand, popularity and importance as an effective method of education, above identified problems are visible in the Sri Lankan context at present.

Recent statistics, particularly related to one of the most demanded study programmes offered by the OUSL,

Bachelor of Management Studies (BMS) degree, it is apparent that graduation rate comparing to registration rate is significantly at a lower level, which is less than 10%. Further, since students are provided with the opportunity of extending their degree, majority of them do not complete the degree during the stipulated four years period. Specifically, among the graduates, small proportion has been able to secure a first class or second-class upper division degree as many of undergraduates are looking for mere paper qualification.

Open Learning (OL) is a student-centered approach to education that removes all barriers to access while providing a high degree of learner autonomy. It is hence characterized by removal of restrictions, exclusions and privileges, accreditation of students' previous experience, flexibility of time management, and substantial changes in the traditional relationship between professors and students.

Open nature of education can be seen in Distance Education (DE) in terms of open admissions, freedom of selection of what, when and where to learn. DE where the learner is separated from the teacher and/or institution is evolved gradually with the changes in the society and with advances in educational technology such as print, audio-visual media, computer and telecommunication technology. As a result, many researchers classify the development of DE as generations from technological point of view.

When focusing on the higher education sector, the institutions existed over the years to provide higher

education for their clients identified as students or learners. These institutions have two major, but different approaches to provide their services. The first type of institutions is usually identified as conventional institutes. Literature shows that such institutions have survived for several centuries in the world and are mainly employing the 'face-to-face technique' to deliver and impart knowledge to their clients identified as students. The other type of institutes employs different techniques to deliver and impart knowledge to their clients identified as learners who are not physically present.

Evidence suggests that such institutions have been in existence from the mid nineteenth century. Furthermore, literature evidences that institutions which employ face to face learning are identified as conventional institutions and those institutions which employ different techniques to deliver instructions to their remote learners are identified as open and distance learning institutions. The openness of DE is also seen in relatively flexible organizational structures, delivery and communication patterns, and the use of various technologies in support of learning.

Hence, openness further removes barriers to education as age, employment, previous experience, attending classes and thereby offers flexibility to learners. During the recent past, DE and OL became amalgamated to form the concept of Open and Distance Learning (ODL).

DE organizations traditionally have shown a strong bias towards supporting the freedom of individual learners to exercise choice over one or more of the main processes of their learning. Typically, this involves supporting learners to take responsibility for aspects such as what they learn, how they learn, where they learn, how quickly they learn, who to turn to for help and whether, when and where to have their learning assessed. With the laps of the time due to complexities in extended society in Sri Lankan context, many adults have shown greater preference for Open and Distance Learning (ODL).

There are so many advantages embedded in this ODL system. However, due to the deficiencies in the ODL system especially the lack of supporting services, students have not been able to successfully complete their study programs. Therefore, the purpose of this study is to assess learners' perspective of the learner support services on students' retention. For that one of a major study program offered by the Department of Management Studies, of Faculty of Humanities and Social Sciences of the Open University of Sri Lanka was selected.

Support Services

Human needs and wants are satisfied through products offered by organizations. Even though products are traditionally categorized as goods or services, boundaries between them are blurring nowadays. Products are offered as a bundle and, depending on the relative proportion they are categorized as either goods

or services. Accordingly, HE is categorized as a service; specifically, it is a professional service which caters the need of learning and acquiring knowledge, expertise and skills. It offers opportunities as the product to its customers, i.e. students, with the help of tangible and intangible elements as infrastructure and faculty expertise respectively.

HE service is provided by people for people, directed at student mind via intangible actions hence, it is a mental stimulus processing service which does not result in ownership of any physical item and benefits are therefore purely intangible. These benefits are unique to each student thus education service is heterogeneous even though all the students are offered with the same service.

Student Involvement

Theory of student involvement defines student involvement as the amount of physical and psychological energy that the student devotes to college experience. It is the ability of an individual to take charge of own learning by setting goals, identifying gaps in knowledge and addressing them through a self-monitoring process. An academically involved student may participate in classroom discussions or study by him or herself hence student involvement can happen in both inside or outside the classroom. Thus, involvement can be observed and measured qualitatively or quantitatively with respect to each student. Accordingly, student involvement is a behavioral phenomenon and connected with the individual student.

Student Experience Quality

Services are always accompanied by experience since they result in experiential effects. Experience is the intangible takeaways from service encounters which originate from a set of interaction between the customer and a product, a company or part of its organization over several touch points in the service journey. In HE, students bring certain characteristics with them and interact with services provided by institute resulting a learning experience. As per student life cycle, student experience starts when a student decides to study at university and evolves through the phases as application, registration, teaching, learning and assessment, graduation and post qualification experience.

It is not limited to class room learning or academic matters but covers whole experience they are going through including out of class non-academic aspects as student support and administrative activities as well as social aspects as forming new friendships, advising and mentoring. The most developed aspects of customer experience measurements concern customer perceptions of parts of the service journey or of the overall customer experience based on their affective analysis of service which is known as customer experience quality. On student point of view, student experience quality is the students' perceptions of direct and indirect inputs they receive from their college which indicate student's own view towards the variety of aspects as curricula, program delivery, quality of instruction, and learning support. If their expectations on these elements are met,

they tend to rate it as a quality experience and if not the HE other way around.

Impact of Support Services on Student Involvement

There are empirical studies that have identified consequences of student involvement rather than its antecedents particularly in the DE context. Specifically, how student involvement is affected by services offered by institutes has not empirically investigated earlier hence this paper attempts to bridge the prevailing knowledge gap. Theory of student involvement provides the theoretical foundation for this relationship.

As one of the postulates of the theory emphasizes, if educational policies and practices of a HE institute are effective, it will result in increased involvement in academic activities by its students. These policies and practices provide the ground rules for functionality of the institute such that what it offers to students and how it is offered are part of these policies and practices. Therefore, it can identify that core and supportive services offered are included in and influenced by these educational policies and practices of the institute.

Even though previous studies have not explicitly identified impact of these support services on student involvement, by analyzing scattered findings it can identify that support services results in effective student involvement. For instance, facilitating services as administrative support and provision of timely information address alienation feature unique to DE whereas enhancing services as multiple and flexible

payment methods aligning with modern technological innovations make it convenient for students to execute their studies without constraints.

Since majority of learners in the DE system are working adults with family responsibilities, financial support in terms of scholarships or payment in installments can assist students in continuation of their studies. These support services provide a hassle-free supportive learning environments and conditions for students where they feel committed and comfortable with the institution resulting higher integration with the academic activities. Accordingly, based on theoretical and empirical grounds, following hypothesis is proposed in this paper.

Mediating Role of Student Experience Quality

Mehrabian and Russel model which is based on Stimuli-Organism-Response framework highlights that individual's feelings and emotions evoked by environmental stimuli ultimately determine their behavior. Environmental stimuli are what people receive with their senses and after interpreting them on their own view, an emotional state expands into either one of pleasure or of arousal. Next the person responds to the emotional state through a behavior which can be either approach or avoidance related.

An approach or positive related behavior indicates that the person possesses a better feeling and vice versa. Hence it is apparent that emotions indicate a person's perception on stimuli and it will result in his or her

behavior. Accordingly, in the HE context, support services can be treated as stimuli received by students, more specifically contextual stimuli, and their involvement is the behavioral response to those stimuli which is mediated by their perception on learning experience, i.e. experience quality, gained from those services.

On the other hand, Entwistle and Taithave specifically identified a direct relationship between student perception and actions. Positive perception on their learning experience influences desirable study behaviors which results increased student involvement. When meaningful learning experiences are missing, students often become disengaged and dissatisfied because they see no relevance in what they are learning.

Accordingly, students with few chances to participate in meaningful learning experiences are denied the opportunity to integrate and apply the knowledge they have obtained in their classes. Therefore, contemporary research in student learning has also suggested a relationship between learning experience and study behavior.

Role of a Teacher in a Higher Educational Institute as a Researcher

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Dimensions of Learning

A teacher in any kind of educational institute, which may range from preschools to higher educational institutes, attempts to facilitate the process of learning, by which learners actively construct meaning from their experiences in association with their prior understandings. Teachers basically utilize their own experiences and understanding, which is referred to as "teachers teach as they are taught" within this process.

Due to recent enhancements, learning has been remodeled as "New Learning", with evolved learning outcomes, novel learning processes, and innovative instructional methods, elaborating five dimensions of learning as,

- development of flexible and decontextualized proficiency rather than reminiscence of facts and contexts specific application of skills
- facilitating learning rather than mere transmission of information to students

- promoting student engagement as active constructors of cognitive networks rather than receptors of information
- enhancement of analytical and clinical skills to address different issues, rather than direct application of knowledge
- enrichment of social environments to promote self-regulated learning from failures and experiences of other students.

Influence of Research for Quality Teaching

Effective teaching requires a strong knowledge base within the teachers to adequately address and facilitate the above dimensions. Knowledge base may be considered under three categories, general pedagogical knowledge; content knowledge and pedagogical content knowledge (Shulman, 1986)[1].

Even though most teachers are enriched with a satisfactory level of content knowledge, acquired during their academic studies, the pedagogical content knowledge, which is derived from the content knowledge, often remains limited in their early teaching career. For prospective teachers at their initial stages of teaching career, study of an academic discipline seldom fails to provide an understanding of the means and methods of delivering their subject know-how to the learners.

[1] Shulman, L.S., 1986. Those who understand: Knowledge growth in teaching. *Educational researcher*, *15(2)*, pp.4-14.

Among numerous avenues for development of pedagogical content knowledge for effective transmission of the academic content knowledge into learners, research is treasured as one of the most efficient approaches.

The association between teaching and research, has been a deeply discussed subject as most of the academicians often believes that research is a key for the enhancement of teaching activities at any level, ranging from primary education to higher education. However, extreme involvement in research would not guarantee proficiency and effectiveness in teaching and may sometimes detract from teaching.

Difficulties in rational use of available time, issues in prioritizing duties and responsibilities and the frustration caused when shifting priorities from the imminence of a research finding to teaching students, have been found as the culprits causing low teaching quality in some quality researchers. Thus, the symbiotic relationship between high research productivity and teaching productivity should be interpreted carefully to guide the prospective teachers in enhancing their teaching proficiency.

Research: An Insight into Fundamentals

A logical and systematic search for new and useful information on a particular topic is understood as research. Irrespective of the discipline, research studies may be described under different categories based on a variety of factors, namely types of research (as

Quantitative vs Qualitative), nature of the study (as Descriptive vs Analytical), purpose of the study (as Fundamental vs Applied) and design of the study (as Exploratory vs Conclusive). However, in the educational context, five broad categories of research have been discussed as illustrated in Figure 1.

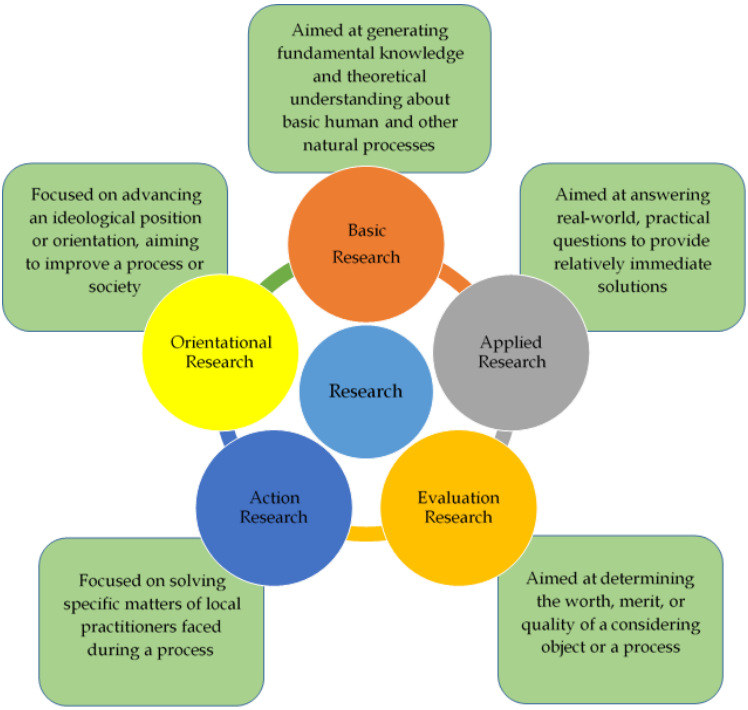

Figure 1: Basic types of educational research

Based on the core concepts of "Epistemology" or the "Theory of Knowledge", any individual gathers and

enriches his/her knowledge base through two major methods, namely via experience and reasoning. As proposed by John Locke (1632–1704), the human mind at birth remains as a *tabula rasa*: a blank slate, which is ready to be engraved with the things that are learnt from the environment. Personal knowledge base, attitudes and perceptions of a person is therefore developed based on the customs, beliefs, and traditions of the surrounding natural and socio-cultural environment.

As described in "Empiricism", learning is a lifelong process, which in turn is highly beneficial for a teacher in improving his productivity via experiences of his own or others. At the other extreme, reasoning that involves rational thinking on any subject matter, is believed to provide or enhance knowledge.

Therefore, "Rationalism" that suggests all the knowledge is derived from reasoning of independent observations by an individual, is respected as the primary source of knowledge. As inferred above, an interplay of both experience and reasoning, would be more effective in developing the knowledge base. Thus, research, which plays a key role in enhancing both experience and reasoning of teachers, would be more effective in developing the knowledge base, enabling them to improve productivity and proficiency in their teaching. Therefore, the role of a researcher is a crucial role, which should be played by a teacher along with other roles such as designer of learning environments, teacher, nurturer, evaluator, motivator and researcher

etc., in a classroom to ensure facilitating the requirements of "New Learning".

Value of Research for Teaching of Academics

Teaching is the most important responsibility of any teacher, regardless of the level of institution (preschool to higher education) or position of recruitment. Research supports the teaching mainly by contributing to the enrichment of all knowledge tiers; general pedagogical knowledge, content knowledge and pedagogical content knowledge.

This has been emphasized, since the dawn of this century by Buckingham (1926)[2] who states, "The teacher has opportunities for research which, if seized, will not only powerfully and rapidly improve the method of teaching but will also react to vitalize and dignify the work of the individual teacher". Even though the contribution of different research types towards the productivity of teaching remains sophisticated with different mediating factors, positive associations between excellence in research and quality teaching have been evidenced in scientific literature.

In general, of the aforementioned five types of educational research, the content and pedagogical knowledge are extensively enhanced and benefited by basic, applied, orientation and evaluation research. On the other hand, an interplay of evaluation, action and applied research directly contribute to the improvement

[2] Buckingham, B., 1926. Research for teachers. *Nova York: Silver, Burdett and Co.*

of general pedagogical knowledge and pedagogical content knowledge. However, the specific contribution of different research categories to the above three tiers of knowledge domain may vary, since a particular type of research could effectively contribute to all the three knowledge tiers based on the nature and objectives of the study.

Research has been found to result seven benefits towards teaching quality improvement in academics, especially in higher education institutes, which are listed below.

- Enables teachers to remain updated on new developments in subject matter & enhance their intellectual vitality and involvement.
- Nurtures intellectual self-discipline inducing to organize the course contents and lectures in a better form, while ensuring clarity and absorption by the students.
- Motivates students towards independent thinking through intellectual challenges in a constructive manner.
- Nurtures critical reasoning, systematic inquiry (research) and passion for scholarship.
- Improves involvement, and sense of excitement of the teacher, indirectly stimulating the students to learn.
- Motivates the teacher towards better teaching and provide access to novel knowledge on teaching pedagogy.

- Makes sure that adequate and ideal examples are introduced with more useful supplementary material.

Systematic and premeditated inquest conducted by teachers, on different disciplines including teaching has been described as "teacher research". It has been well understood that models of teacher research may fluctuate on a gamut ranging from direct adaption of an experimental paradigm to clinical inquiry, ultimately leading to systematic observations and reflections on the classroom or students.

Teacher research often deviates from "pure research" conducted by most academicians on different disciplines like life sciences and applied sciences. Action research, which is a deliberate, solution-oriented investigation aimed at evaluating the existing practices and ideas towards enhancing knowledge, improving curriculum, teaching, and learning, falls in line with the concepts and requirements of teacher research. This involves a systematic process of problem identification, data collection, reflection, analysis, implementation of ideal actions, and redefinition of issues.

Regardless of the approach (experimental or clinical), teacher research, directly enable teachers to rethink their teaching methods, tools and strategies based on student learning and assist the internalizing of personal teaching and learning systems. Thus, the process of learning automatically gets facilitated allowing the learners to learn more actively and teachers to teach more effectively. Further, experimental approach of

teacher research has yielded proven benefits in relation to motivation and active participation of students towards learning, allowing them to enhance the critical thinking ability.
This induces the questioning of learners, empowering them to raise questions on teaching, allowing them to claim ownership of the learning process. In turn, student teacher involvement in the teaching process is strengthened and life-long learning skills are nurtured within learners.

In addition, action research provides an arena for teachers to critically rethink their teaching (with respect to contents delivered, teaching methods, strategies and tools used and assessment criteria), allowing them to attain deeper understanding of motives, perceptions, and attitudes of their own and learners. Due to this reflectivity, with time teachers tend to contemplate teaching as a process of ongoing research rather than as a process of mere information transfer, allowing the attainment of excellence in teaching.

Value of Research for Career Development and Recognition

For a long time, many teachers affiliated to higher educational institutes have often treasured "pure research" over "teacher research and action research". Teachers who engage only in teaching, have been considered relatively inferior than the researchers who engage in "pure" research. This dichotomy has led to the development of a highly stratified system, where

teachers remain controlled and guided by different entities such as university administrators and curriculum specialists. Research has proven to make a difference, acting as a method or a point of view of teachers rather than a field with pre-defined limitations.

Through action research, teachers are enabled to forward their opinions and beliefs on education, research or any other field, allowing them to make a difference and develop professional dignity and freedom. Further, research has aided teachers to develop independent career recognition, rather than remaining as relatively powerless "technicians", who apply esoterically generated knowledge. Research remains as the key to educational change and authority. Nevertheless, research remains as an ideal method for the reshaping and development of education and improvement of educational institutes, in addition to the synthesis of new knowledge that may be related to practice.

Role of Research in National Development

A country is significantly benefited from productive high-quality research, through strong and vital contributions towards the development of a prosperous and confident knowledge-based society, while ensuring sustainable development of the nation. Research simply reassures the existing knowledge and often leads to the synthesis of new knowledge, technologies or products. Such transfer of knowledge and technologies could directly contribute to the development of the nation by ensuring a safe and harmonized society, sustainable

economic prosperity and high-quality environment. Research outcomes that are directly associated with high quality innovations would in turn assure the continuous improvement of the country in terms of economy, entrepreneurship and social wellbeing.

High quality research would promote the linkages among different stakeholders such as government, non-governmental organizations, private sector and community, facilitating the contributions of all parties towards the achievement of national goals. Research would also enhance the global connectedness of a country through numerous collaborations and networks, thereby providing both recognition and cutting-edge knowledge/technology to the country.

Contributions made by research to education and curriculum development would ensure excellence in education within the country, producing more knowledgeable citizens and an intelligent community that can contribute more productively for the development of the country. Further, different types of research could critically analyze the existing conditions in different sectors of a country and offer excellent solutions for devastating issues that are faced by a nation.

In addition, the intellectual and multidisciplinary ideas generated through research could guide the policy and decision-making processes of a nation, leading to excellence in any sector. Therefore, research, may be the key to national development. In many countries, the

status of the teacher has been elevated as a nation builder, who plays an eminent role for the country.

Teacher or a Researcher? Role of an Academic

With the innovative changes in viewpoints and philosophies on teaching and learning, academics/teachers are induced to play multiple roles such as teacher, researcher and administrator etc. Based on the current focus of the University Grants Commission depicted by the promotion schemes, teachers (lecturers) of higher educational institutes in Sri Lanka, may play 16 role profiles based on the active contributions made towards teaching, research, administration and institution/nation building (Figure 2).

The four primary roles among them (indicated in the outer circle) are,

- Excellent teacher: One who demonstrates exceptional quality in teaching with limited focus on research, development and administration
- Excellent Developer: One who is totally dedicated towards institutional/national or curriculum development, with limited focus on the other three aspects
- Excellent Administrator: A teacher who primarily focus on administration and management aspects of a higher educational institute rather than teaching, research or development

- Outstanding researcher: An academic dedicated towards research, with minor interest on teaching, administration or development

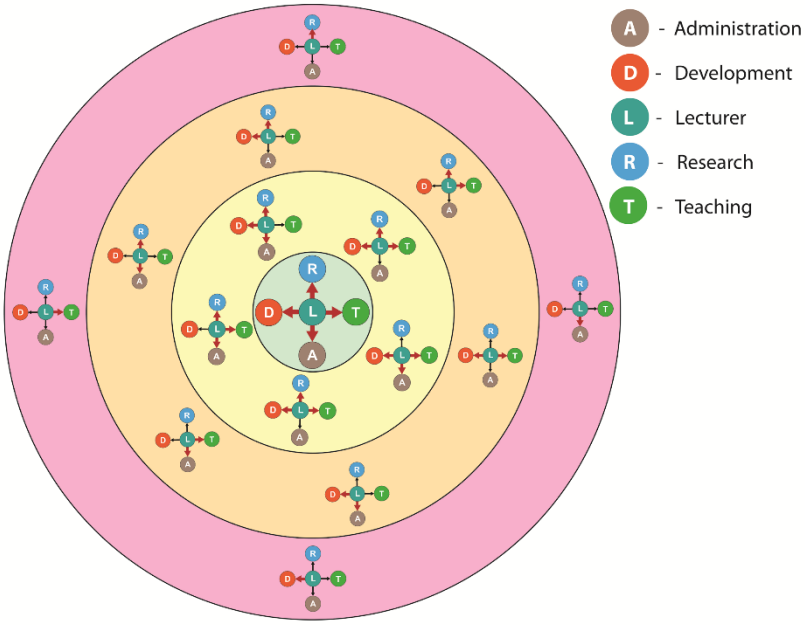

Figure 2: Potential role profiles that can be played by a teacher/lecturer in a higher educational institute

Note: Bold arrows indicates the more focused aspect of the teacher in different role profiles.

Any teacher at the initial level would often play one of the above roles (outermost circle of figure 2), with high

focus on only one aspect. At the next level, teachers would play a more advanced role profile, focusing more on any two aspects resulting in 6 role profiles based on the possibilities in two-way interactions. The subsequent order of teachers indicated in the third inner circle would ensure satisfactory performance in any three aspects yielding 5 different role profiles. An ideal teacher in any educational institute should attempt to develop his/ her personal career as a "well-rounded teacher" (indicated in the center) with satisfactory performance in research, administration and national development, while maintaining excellence in teaching, since teaching should be the primary goal of a teacher.

The level of role profiles enhances from the outward of the diagram towards the center, resulting in the most excellent role being placed at the center as the "well rounded teacher". The prime objective and vision of a teacher should be acquiring the qualities of a "well-rounded teacher" with time. For this, one should at least try to develop his/her own career, starting from role profiles illustrated in the outer circles (with prime focus on one aspect) and progressing towards becoming a well rounder teacher.

To attain this, the role of a researcher remains as a crucial requirement. As suggested by Toledo-Pereyra (2012)[3], a teacher should develop ten major qualities, namely interest, motivation, inquisitiveness, commitment, sacrifice, excelling, knowledge,

[3] Toledo-Pereyra, L.H., 2012. Ten qualities of a good researcher. *Journal of Investigative Surgery*, *25*(4), pp.201-202.

recognition, scholarly approach, and integration, to induce the development as an ideal researcher. Regardless of affiliation, all the academics should proceed on a continuing journey of acquiring the skills and qualities of a well-rounded teacher, to empower the students, institute and the nation.

A teacher facilitates the imparting of knowledge, transfer of culture, and inculcating skills and attitudes in learners, by playing an array of roles as teacher, researcher, administrator and institution/nation builder. It has been well advocated that excellence in teaching is closely associated with research. Research, plays a key role in enhancing both experience and reasoning of teachers, enabling them to improve productivity and proficiency in their teaching. Despite the variations in nature, all types of teacher research may be directed towards achieving of excellence in teaching, development of institution/nation and enhancement of career.

In case of higher educational institutes in Sri Lanka, the academics play different role profiles with varying degree of focus on teaching, research, administration and institution/nation building. An ideal academic should be a well-rounded teacher with satisfactory achievements in all the above four aspects. Further, all the academics should proceed on a continuing journey of acquiring the skills and qualities of a well-rounded teacher, to empower the students, institute and the nation.

Moving from Teaching to Learning: Effectiveness of Student-Centered Learning in Mass Lectures

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Introduction

It is a common argument that explains student centered learning is not practical in mass classes. However, the Sri Lankan University System is still following the traditional classroom teaching method. It is a time to make a revolutionary change.

Not only in Sri Lanka, as per Huba J.M and Freed J.E.[1] (2000) most of the faculties and colleges in the world use traditional lecturing system to teach. Though it is not completely inefficient, the method is not attractive and user friendly among the students. Teaching from the perspective of the learners than the perspective of

[1] Huba, M.E. & Freed, J.E. (2000). Learner Centered Assessment on College Campuses: Shifting the Focus from Teaching to Learning. *Education Resources Information Center*.

teacher allows the teacher to do their lessons in a creative manner.

This is the simple idea of Student-Centered Learning (SCL). Analyzing SCL in deep, it is the mechanism where teaching and learning process is learner centered which shift the focus from teacher to student which gives the student a certain level of autonomy, independence and responsibility.

As per Neo and Kian (2003)[1] SCL allows learners to become successful in constructing knowledge through solving problems that are realistic and usually work in collaboration with others. This assist the students to develop their cognitive learning psychology (Jonassen, Peck & Wilson, 1999)[2]. While it is an independent learning through their experience, it becomes a lifelong learning for students. As stated by Baeten *et al.* (2010), effectiveness of the use of SCL may vary based on the personality characteristics of the students.

Accordingly, SCL methods can be deeply apply to the students whose characterized by openness to experience, extraversion, conscientiousness, agreeableness and emotional stability. Further if the students are self-confident, intrinsically motivated and

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[1] Neo, M. and Kian, T. (2003). Developing a Student-Centered Learning Environment in the Malaysian Classroom - A Multimedia Learning Experience. *The Turkish Online Journal of Educational Technology*, 2(1), 13-21.

[2] Jonassen, D. H., Peck, K. L. and Wilson, B. G. (1999). Learning with Technology: A Constructivist Perspective. Merrill/Prentice Hall, New Jersey.

self-efficacious such students even will look for a different angle of teaching than the traditional practice.

Whenever SCL is applied to higher education, a proper monitoring mechanism or observation and assessment strategy should be set to evaluate the performance level of the students. This would help the teachers and instructors to identify the discrepancies available in the methods that they used. In Contrast, edglossary.org express that American public schools have criticized the use of SCL as a fuzzy method while giving more concern over the teacher centered teaching mechanism throughout a century.

As per Mayer 1998[3], this traditional learning mode, basically, the teacher controls the instructional process, the content is delivered to the entire class and the teacher tends to emphasize factual knowledge and the focus of learning is on the content i.e. how much materials have been delivered and how much have the students learned. Thus, the learning mode tends to be passive and the learners play little part in their learning process. Recently, some education reforms have identified the importance of SCL which is a motivation factor for American Public Schools to adopt the SCL methods for their curriculums.

Importance of SCL

[3] Mayer, R. E. (1998). Cognitive Theory for Education: What Teachers Need To Know, in How Students Learn: Reforming Schools Through Learner-Centered Education, *American Psychological Association*, Washington, DC, pp. 353-377.

In SCL, teaching and learning is personalized, it addresses the learning interests, distinct needs and aspirations of the students. Students get an opportunity to perform a task which develops their self-esteem. Students get an opportunity to develop their skills. Further they will be motivated to express their knowledge in a creative manner. Hence, SCL is a proficiency-based learning method. Based on these, it is possible to conclude that SCL is a good system to develop student personality.

SCL opens an opportunity for students to learn in free environment. If the learning process is free from constraints the stress level of the students will be lower. If so the retention rate of the factors that they study will be higher. SCL gives an opportunity for the teacher to develop strong student teacher relationship. This helps the teacher to resolve the possible issues arising among the students while performing the task.

Rather than Traditional "Chalk-and-Talk" teaching system, SCL is much more user-friendly to the generation X students in the university system who grew up in a tech savvy environment. This increases the social connectivity among the student and it would assist them to develop many skills such as team work, sharing the knowledge and resources, equal contribution, leadership skills, time management and self-confidence in handling responsibilities. These skills would be much more useful for the young students who are getting ready to join the industry as professionals.

The Role of the Teacher in SCL

When adopting to the SCL it is necessary to treat students as the center of the institution. There should be an own guidance among the students which allows them to obtain cognitive and affective learning experience. Thus, it helps them to guide for their own decisions in relation to the responsibility appointed.

As per Weimer (2002) in the student-centered classroom the roles of teacher should be necessarily changed, so that the teacher changes from the "sage on the stage" to the "guide on the side" who views the students not as empty vessels to be filled with knowledge but as seekers to be guided along their intellectual developmental journey. This means the teacher should become a facilitator for the students who provides guidance where the student performs the tasks.

Students learn from experience and teacher will monitor and observe the accuracy of the outcome of the activities performed by the students. However, having a complete SCL based teaching learning process might arise issues for the students with special personalities. So, it is always better to have a balanced system to bring everybody to the same stage.

Role of the Student in SCL

In SCL Students even have a key role to play. If the education environment changes from traditional system to the SCL then students should first change their attitude towards the learning process. Students should accept the teacher as a "primary facilitator", while

students should get the ownership of doing the allocated tasks.

Once they initiate the SCL process they will develop their self-confidence in decision making. This would lead to create a highly dedicated student for the subject. However, within the process the students should raise questions to the teacher, refer books, articles and prior researches. This will help them to solve the issues that they are coming up with. The student is the key successor of this process. There should be a positive response and proper participation from students to create a successful SCL process.

Responsibility for Learning

The responsibility of learning moves from teacher to student in learner centered learning process. However, it is not allowed to shift the responsibility back and forth between the student and the teacher. (Weimer, 2002) The Faculty and the teachers should design the course outline in a way that, students required to hold up themselves with the course with active participation till the end of the educational contract. By using SCL the faculties could shift the learning responsibility to the responsible learners who are investigative and intellectually curious and motivated to study the depth of the subject or related issues.

SCL prices allow the students to control their learning content, delivery and it gives an opportunity for the students to decide the depth of the subject that they study. So, students should take the responsibility for

their learning by becoming active partners in teaching and learning process rather than students receiving all the information from the teacher in a passive manner within the traditional class room.

Kennedy (2009)[4] found that after participation in a debate, positive rating of the experience as an instructional strategy increased from approximately 75% to about 85%, including students who were initially reticent to participate; interestingly, both before and after the debate male students showed a stronger preference for debate over female students. This emphasizes that it is possible for us to bloom the hidden abilities of the students by using SCL in the teaching and learning process.

Why SCL is Much Effective?

SCL environment creates a mutual relationship between the student and the teacher which creates academically strong atmosphere in the teaching and learning environment. SCL is much more suitable for the challenging learning environments which are relevant to the course-work and which allows the student and teachers to work collaboratively while student-directed the tasks which are connected to real-life situations.

As per the studies conducted by Granger *et al.* (2012)[5] inquiry-based teaching is a traditional teaching method.

[4] Kennedy, R. (2009). The power of in-class debates. *Active Learning in Higher Education*, 10(3), 225- 236.

[5] Granger, E.M., Bevis, T.H., Saka, Y., Southerland, S.A., Sampson, V. and Tate, R.L. (2012). The Efficacy of Student-Centered

Instead, students must be motivated to support their work and develop it with their own knowledge and experiment skill. This would help to increase the SCL objectives.

In Sri Lanka, the students were used to follow Teacher Centered Learning (TCL) mechanism from their kindergarten to upper school which must be changed. The TCL process never support students to increase their creativity and the self-confidence. Thus, in class-room education TCL has been identified as an easy method to control the students since students are being guided to do the task and they must follow the instructions given by the teacher. Since the teacher direct all the activities the students will learn all the important points and those will be highlighted in their learning process.

But the students become methodical in the learning system since they communicate less within the class room. TCL is less attractive to most of the less motivated students. It never allows the students to express their views, thus students become naïve in public speaking. Basically, TCL is suitable to create more structured student or "*robot*" rather than self-disciplined, self-motivated and developed student or "*Creative Student*".

SCL allows students to learn and develop many skills in addition to the teaching and learning process. This improves communication and collaborative skill

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through group work. Students will raise their question while performing the task, and it creates a certain level of independency among them.

This is important to develop their personality skills. Students become more active in the class room, they learn from their problems and errors. But in SCL, there is a possibility for students to miss the important facts that they should learn. So, it is important to have the teacher shadowing what they perform. Such observation mechanism solves the key drawback of SCL process. Thus, it becomes much more effective than TCL which attracts more student attention to it.

However, moving to extreme ends of using only TCL or SCL is not effective. Instead teacher can effectively create a proper mixture in TCL and SCL methods within the course outline. This would help the teacher to develop an effective strategy.

Mass Lectures

Jones had done a study based on Australian Universities and he explains that the higher education system in Australia has rapidly changed with the increasing enrollment of students to the courses which created a mass education system within the country. With such increased class size, the staff ratio must be increased to reduce the stress level of the teachers. Higher enrolments have also resulted in greater heterogeneity within the student population requiring an understanding of the diversity among students in terms

of background and learning styles (Ward & Jenkins, 1992)[6].

As per Jones, the realities of teaching large classes (those in excess of 50 students) means that educators often resort to the traditional 'sage-on-stage' delivery format with the lecturer standing behind a lectern delivering the material with students passively taking notes. This system leads to kill the creativity of the students and it leads to get less effective feedback from students relates to teaching and learning environment.

Hence, the requirement has been identified to diversify the teaching and learning environment in the mass classes. As per Slavin (1990); Smith & Boyer (1996); Tinto (1995); Vachris (1999); Wink(1997) by using a critical pedagogy, educators can develop a strong framework which addresses both the needs of students and the limitations of the large class structure by providing strategies to engage students and encourage them to become active participants in the learning process.

As per their suggestions within mass classes it is possible to use visual aids and multimedia, group work, student centered discussion, handouts and role-plays. This encourage students to actively participate and question and debate their findings within the class room. Though it is challenging to apply SCL in mass lectures due to the differing needs of the students and

[6] Ward, A. and Jenkins, J. (1992). The problems of learning and teaching in large classes. In G. Gibbs & A. Jenkins (Eds.) Teaching large classes in higher education. London.

their expectations, and learning styles, this can be overcome by setting up a detailed lesson plan or session plan for the subject. However, only the practically applicable methods must be selected by the instructors to conduct the SCL process.

Donohue, (2016)[7] highlights that American high-schools were experiencing a rapid growth in their performance due to the transformation process of Teacher Centered Learning to Student Centered Learning process. Further his studies reveal that, in rural environments, these approaches are helping students who are not on track to graduate. UK high-schools based project conducted by Reif *et al.*[8] have identified four new aspects of performing SCL process for large groups which they categorize as Personalized Learning, Computer Based Learning, Anytime-Anywhere Learning and Students take ownership in learning.

As per the study, small changes within the existing class would help to personalize the learning process. The teachers can use differentiated instructions including individualized pacing, array of class rooms and independent assignments and a range of support in performing the task. However, the teachers must spend more time in planning their work than the traditional class room. Further, the site visits also would be helpful

[7] Donohue, N.C., (2016). Student-Centered Learning Can Modernize Schools Our education system isn't broken; it's outdated. Education Week.

[8] Reif, G., Shultz, G. and Ellis, S. (2016). A Qualitative Study of Student-Centered Learning Practices in New England High Schools. University of Massachusetts Donahue Institute.

for the teacher to personalize the study area which builds up a strong teacher and student relationship.

Personalized Learning environment allows the students to choose and they will have a voice in their education. In Computer Based Learning the materials will be available in the learning management system where the students follow. Further the new technology will be used by the students to do the researches and they will be submitting their findings online. The feedback will be provided by the teacher directly through the system. This approach motivates the current generation who grew in a high-tech savvy environment.

Further the teachers can maintain the data in the system itself which could be able to use to provide a grading to the students. Further the grading will also be available online where the students receive an online generated result sheet or report card. This system has been used by most of the international universities to facilitate a distance learning system within their course modules.

Anytime-Anywhere Leaning is a "place-based learning system. Students must move to their respective industry and study independently. The objective of this is allow the student to learn from the community. With reference to the motto, "Teaching our kids out in the world and bringing the world into our building is at the core of what we believe makes for good learning" the study environment can be diversified by industrial trainings, vocational practices, site visits or field visits and educational camps which allows the students to

learn from the external environment. However, in this system monitoring mechanism is less applicable. The other obstacles are time scheduling, community partners, transportation for students and availability of the students. But these can be overcome by having a proper planning mechanism.

In the system of Students taking the ownership of their learning, the teachers can use student presentations, student-led parent-teacher conferences, peer tutoring, the workshop model, passages, restorative practices for handling disciplinary matters, and providing students with opportunities to reflect on their work, development, and learning styles. These help to build the 21st century skills among the current generation.

Further, the students who expose to this type of learning process develop high independency and become more responsible. However, a discrepancy has been identified in this system as less time management would lead to increase the stress level of the student. Thus, it reduces the quality of the output delivered by the student.

How to Evaluate the Performance?

The SCL process is not just delivering a grading to the student, but more importantly it provides and promote learning, which enhance the skills of the students. In such conditions, the course objective and learning goals will be clearly defined, and the students will get an opportunity to assess their own work and the same of their peers' by asking critical questions. This opens

many opportunities for them to practice the theory and practical aspects of their subject content. Such strategies reduce the anxiety among the students and the temptation to cheat (Weimer, 2002)

It is an accepted pedagogical premise that the evaluation criteria are pre-determined based on the objectives and practices used, and the extent to which the course objectives are fulfilled should also be evaluated (Cornelius and Gordon, 2008)[9]. This includes traditional evaluation of learning which offer a mark based on the output that the students deliver.

Instead of the traditional approach of evaluation the teachers can provide the feedback on the assigned task based on the objectives of the model and the strategies while it is possible to develop a rubric system to evaluate and provide feedback which allows the students to develop the knowledge and the skills that were expected within their graduate profile.

In conclusion, it can be finalized that applying SCL process in mass lectures is also possible with little more dedication from the teacher for planning. Thus, it helps the teacher to eliminate the student resistance in taking the ownership of their own work, while making the learning process interesting rather than spoon-feeding.

[9] Cornelius, S. and Gordon, C. (2008). Providing a flexible, learner-centered programme: Challenges for educators. *Internet & Higher Education*, 11(1), 33-41.

Use of Blended/Hybrid Teaching and Learning in Higher Education Systems

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"*Education no longer comes in rows and textbooks, but from a combination of sources.*" - Jodie Johnston

"*Learning in the cloud with interactive images, videos, and 360° media*" - ThingLink Education

As Bonk (2011) claims, "*Anyone can now learn anything from anyone at any time*". In addition, he states that the Web is becoming our preferred learning platform and non-traditional learning is suddenly the norm. At present teaching and learning, now focuses more on the learner and his needs. Moreover, the learner expects to be able to interact not only with the learning materials, but also with his peers. In addition, he wants to study independently on the location, he wants to be mobile in his learning.

The use of Information and Communication Technology (ICT), or better eLearning, in the classroom has become a necessity. Teachers are always looking out for advanced opportunities as to how technology can merge with face-to-face classroom pedagogy to enhance teaching and learning. Blended or Hybrid learning, in the circles of formal and non-formal

education, is becoming one popular term as teachers are employing plethora of technologies to optimize the teaching and learning experiences and learning outcomes of learners.

Before the advancement in computer revolution, digital materials have served in a supplementary role, helping to support face to face instruction. Hence, there is the need to fully establish the meaning of Blended Learning (BL) and the benefits it poses to those who employ this concept. The first question asked by most people when hearing about blended learning, of course, is just "What is blended learning?" Even though blended learning has become somewhat of a buzzword in corporate and higher education settings, there is still quite a bit of ambiguity about what is meant when the term is used (Graham, 2004).

Hybrid Teaching and Learning is an emerging paradigm for adult education which has not yet been widely implemented and practiced in Sri Lankan higher Educational institutes. Although the blended or Hybrid learning paradigm is practiced by few of the higher educational institutes of the country, no avoidance of offering efficient hybrid teaching and learning courses to its students in higher educational institute. Since the blended or hybrid learning demotivating the strict 80% attendance rule practiced in many higher educational institutes, it behaves as a limitation to introduce Hybrid Teaching and Learning methodology to the higher education system.

However, the introduction of WEB2 technologies provide rich platform to design, develop and deliver rich digital content though internet and internet. The higher internet and intranet bandwidth available within the state universities though LEARN Network and low cost on mobile data will ensure the accessibility to digitally rich content for its intended student. The objective of this article is to discuss the fundamentals of Hybrid Teaching and Learning paradigm and potential of incorporating Hybrid Teaching and Learning into state universities.

Hybrid Learning & Teaching: The Concept

Hybrid teaching & learning or Blended teaching & learning is fundamentally concerned with providing an environment in which students assume responsibility for seeing information and completing tasks necessary to understand the material. As students assume such responsibility, the instructor becomes less of a "sage on the stage" and more of a "guide on the side" (Caulfield, J. 2011).

According to the College of DuPage, Hybrid learning combines face-to-face and online teaching into one cohesive experience. Approximately half of the class sessions are on-campus, while the other half have students working online. Although that may sound like a cut-and-dry formula, a lot of planning is needed to ensure that hybrid works well, allowing its two formats to capitalize on each other's strengths.

According to Kurtus (2004), Hybrid learning is a mixture of the various learning strategies and delivery methods that will optimize the learning experience of the user. The hybrid Leaning is not just use of online material but Classroom training sessions, Computer-Based Training (CBT) via a CD-ROM, Web-Based Training (WBT) can be combined to train the learners.

As opinion by the Blended Learning Initiative (BLI) – Pennsylvania State University, a BL approach combines face to face classroom methods with computer-mediated activities to form an integrated instructional approach. For example, a blended approach to a traditional, face to face course might mean that the class meets once per week instead of the usual three-session format.

Based on the different definition available in the literature that can be considered as a blend or a combination of different methodologies of delivery to achieve the intended learning out come and incorporate a better students' involvement in the process of teaching and learning process with more responsibility by the student. Or simply blend of two or more historically separate models of teaching and learning: traditional face-to-face learning systems and distributed learning systems (Krause, 2007).

The result is potentially a more robust educational experience than either traditional or fully online learning can offer. Blended learning is an important building block of the new schoolhouse that offers students both flexibility and convenience, important

characteristics for working adults who decide to pursue postsecondary degrees (Rovai and Jordan, 2004).

Hybrid learning is student or learner–centered approach which optimizes learning experiences and outcomes as the student interact with other students, instructors, and with thoughtfully organized content, support materials and activities through an attentive integration of computer-mediated activities and face to face environments. As Sorden (2012) states, hybrid learning is not a mere combination of face-to-face and online learning. It is a combination of training methodologies, which uses the best delivery method for the successful achievement of the learning objective.

According to the current literature, as of now, definition does not limit hybrid or blended learning is to a strict form. The terms "blended," "hybrid," and "mixed-mode" are used interchangeably in current research literature. As a final point, it is a combination of rich qualities of traditional face-to-face model with the concepts of distributed learning; the following definition is used by many higher educational intitule.

"Hybrid/Blended learning is a student or learner centered approach which optimizes learning experiences and outcomes as the student interact with other students, instructors, and with thoughtfully organized content, support materials and activities through an attentive integration of computer-mediated activities and face to face environments." (Figure 1).

The Benefits of Hybrid Learning

Many researches have been done to evaluate the effectiveness of hybrid learning methodology. The results clearly indicating that not only do students tend to prefer it as their format of choice, but the learning outcomes and academic achievement are stronger with hybrid than for either face-to-face or the online teaching alone. The reason for the acceptance and better performances are the convenience of following the course at convenient time and phase. Further it facilitates repetitive learning experience with lest cost in terms of money and time. The hybrid learning can offer the best of unified experience both in face-to-face or online instruction.

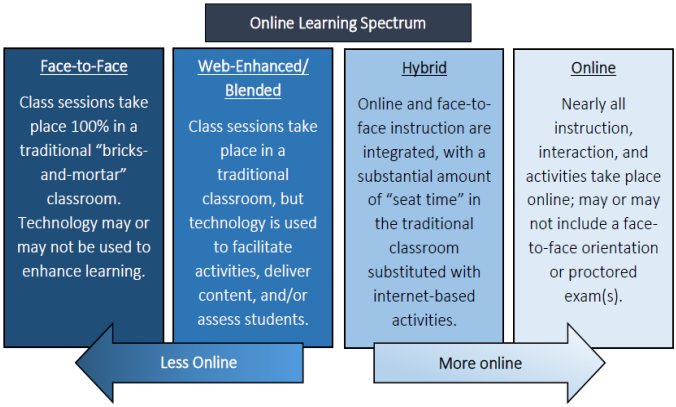

Figure 1: Online learning spectrum

It was believed that traditional Face-to-Face in class teaching, allows the teacher real-time engagement of the problems that can be difficult to capture online.

Such as questioning by both teacher and student, back-and-forth discussions more robust in this setting, visual cues of confused faces and immediate interaction can offer meaningful learning opportunities. However, with the introduction of WEB2 and internet 2 technologies most of the above concept can be implemented even better than face to face environment.

Blogs, social network groups, such as google blogger, Facebook page, and tweeter and Moodle course offer the same capabilities. The One advantage of online discussion forum is the question and discussion session can be following repetitively by all student. Further contribution and be added to the discussion later.

Online learning and computer-based learning induce independent exploration, innovative collaboration, technology literacy, and content mastery. Follower can study the material repetitively to reinforce conceptual familiarity, complete assignments in a time and place that best suit their individual needs. Corporation of peers can be integrated into the online platform better than in a face to face environment. So online discussion forums offer opportunities to develop a richer and sustainable exploration of material than the time restricted, narrow interaction of a face-to-face classroom.

The best advantage is the capability of students who may not be comfortable speaking in lecturer hall can contributors online with much ease.

The unified approach of both F2F and Online delivery of a course will offer comfortable experience for all sort of students. Utilization of time can be optimized in hybrid environment than in a traditional environment. Further it is possible to provide in depth pre-requisites so that to link the material in to previous context of the subject matter without utilizing more time. Flipped classroom concepts can be practiced with added advantage of online discussions in this context to preserve the time until otherwise not possible to provide in a F2F traditional session.

The other advantage of the hybrid learning is the ability of the participant to question the teacher in the face to face session regarding the maters arising from the online session and vice versa. Enhancement of collaboration with peers, team building, accountability, ethical aspects, working in a self-motivated time restricted environment, self-confidence, active Learning are indirect but vital benefits of hybrid learning. Further it's possible to implement active continuous formative assessment into hybrid learning without scarifying the time of student (Teri Crisp, 2014).

The Challenge of Implementation

The secrete of successful hybrid course is the carefully selected and integrated learning outcomes suit to online and face-to-face activities separately. This integration shall address the thoughtful focus on the student experience, available time so that students are presented with engaging material and prompted to interact with it

in innovative ways to achieve the intended learning outcomes.

Restructuring of the course content and its intended learning outcome may be required to convert an F2F course content into a hybrid course. The selection of ILO's to achieve through the online component and ILO's to achieve through the F2F session is a must. Further use of instructional design principles is vital for a successful implementation of a hybrid course. Since the possibilities of how students interact with content and with each other are greatly expanded in a hybrid course, the flow of the following of the course shall be controlled systematically and structurally to ensure the successfulness of the course.

The training of the student to follow a hybrid course at beginning is required by creating the need and the desire, setting specific, measureable, attainable, relevant, and time-bound (SMART) goals, Differentiating Instruction to F2F and online components, introducing use of mobile learning tools and apps.

Planning of Implementation of Hybrid Learning

The current preferred mode of hybrid integration is a blend of F2F sessions and digitally rich online sessions. It's not required to emphases the importance of planning to achieve the success of any course whether hybrid or not. Careful emphases need to be drawn on what you expect students to do online are a good fit for online, the time allocated and available to complete the task for the student are appropriate.

Critically evaluation of the Intended learning outcome the course and separation them into F2F sessions and online sessions are key factors of success.

Just converting a course into online is not hybrid learning. Consideration of the availability of time, devises, technical knowhow of both students and teacher, work load need to complete the task for both teacher and student be considered in the planning stage. Providing step by step guide, course map, sample sessions with guidance, glossary of acronyms, assessments criteria are vital components of a successful hybrid courses. In case of evaluation, the weights given to each component of F2F and Online need to be planed and announced at the beginning of the course so that the student aware of the schedule.

Myths of Hybrid Learning

Just like any other new approaches, the hybrid learning also polluted with some of the myths or unrealistic expectations. One of the most misunderstood phenomenal is providing more the more information will lead to the clearer understanding. Unfortunately, this will disturb the understanding and success of the course. Another myth is belief of all online discussion forums have the same learning potential. This will be limited by the capability, and time availability and of students. Many course designers believe that the all students are all tech whizzes / they know more about technology. But the truth is some of the student are reluctant to cope with the hybrid concept. So careful

attention needs to be taken when introducing the hybrid learning into each batch of students.

Current Resource Available in the State Universities

The one the goal of implementation of the Lanka Education Research Network (LEARN) by the collaboration of all universities in Sri Lanka is to provide low cost high bandwidth internet resource for the researchers, educators and the student. As of today, all state universities and some of the other higher education institutes are utilizing the comparatively high bandwidth of internet facility provided by the LEARN.

According to the literature, the hybrid learning yielded positive impact on the teaching learning process. Secret of the success is to design the course carefully to achieve the intended learning outcomes considering of all combination of limitations and selecting the best blend of F2F, Online, CBT and other activities. Careful of course planning, use of instructional design, testing, prior preparations are key areas to be considered. Both the technical infrastructures and human resource are not a limitation in the state university sector.

Inspiring Students to Think Innovatively in the Teaching – Learning Environment

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Introduction

A lecture is about making students understand the subject related matters within a given time frame. During that time, the Lecturer is supposed to use various teaching techniques to give the best possible lecture. Thoughtful planning is a key to success to deliver an effective lecture. But with all these, how much it can contribute to change the students' mind towards innovative thinking is a challenge. Because the common practice in a lecture is giving knowledge and making students understand it. But developing innovative thinking is something far away from this usual phenomenon. Therefore, such a lecture should be planned very carefully in a way that the lecture is not disturbed with this insertion.

Practice of Innovative thinking is very important in producing creative graduates, who can obtain a valuable skill, where their capabilities are directly applied once they start their professional lives. People who can think different, always have competitive advantages in this competitive world. Because, accepting what is given as

it is with a fixed mind set, and practicing it the same way, will not result a novel deliverable. That deliverable can be a successful idea or a tangible. Creative minds make the world moving. Therefore, this article will explain how this challenge can be handled by Lecturers during a typical lecture.

Importance of Thinking to Students

According to Jim Wheeler in his book "the power of innovative thinking", thinking is the conscious use of our minds to reason, deliberate, debate, predict and reflect on a subject. This is mostly personnel, because all of these are governed by one's individual mind sets. Thinking leads to build up thoughts about the things we observe, depending of the level and the way of understanding, individual's likes or dislikes, attitudes and many other personnel qualities.

But when a lecture is going on, all the students are listening to the same lecture at the same time, therefore all the qualities are directed or under the control by the Lecturer, to a certain level. Listening, understanding, acceptance and storing the facts in mind that the Lecturer is explaining, happens at the same time, during a lecture. Different students spend different time periods to each of the above four moments. Thinking involves in all of them expect for listening, in a successful lecture. Therefore, the Lecturer should facilitate these things during a typical lecture.

Graham Gribbs explains in "Preparing to teach", the importance of asking questions during a lecture, other

than asking "Are there any questions" at the end of the lecture, which has the meaning of "That's all for today". He explains further, how the students should be given time to formulate the questions and check whether their questions are silly to be asked in public, before questioning. This also explains, allowing students to take time to think to themselves for a while is important.

During this time, some will formulate questions, some will think more to understand what is taught to check whether they really have problems, some students will get a chance to store the facts in their minds and there will be some set of students who may innovatively think about the facts and see the unexplained ends during the lecture. They may ask it as a question, if they are given time for that. Therefore, other than listening, understanding, acceptance and storing the facts in mind, thinking beyond/innovative thinking also plays an important role.

Thinking vs. Innovative Thinking

Innovative thinking is different than the normal thinking procedure. Innovative thinking lead to do something in a new/different way or find out unknown ends of many things. At the same time, it involves in lateral thinking which means perceiving patterns which are not obvious.

In a typical thinking process, the student is involved in understanding what is taught, but when the student is innovative, he or she is one more step forward from a

typical student. Innovative thinking may first open the mind to see what is unsent and then will start leading the innovative thinker, act accordingly.

The difference in thinking and innovative thinking is well explained in "Think better", a book by Tim Hurson. He explains two concepts as reproductive thinking and productive thinking. Reproductive thinking is a matter of repeating the past and productive thinking is the kind of thinking that leads to new ideas and breakthrough change. He explains the most important one is productive thinking, which in other word is innovative thinking is better.

Reaching the Highest Level of Bloom's Taxonomy with Innovative Thinking

Blooms taxonomy was developed in 1965 with the leadership of Dr. Benjamin Bloom. Their group identified three main domains of educational learning objectives, which are cognitive, affective and psychomotor. Innovative thinking is more related to the cognitive domain. According to Bloom, the cognitive domain involves in knowledge and the development of intellectual skills.

After some of the revisions done by Lorin Anderson, a former student of Bloom, and David Krathwohl, cognitive domain contains six main domains, such as, creating, evaluation, analyzing, applying, understanding and remembering. Innovative thinking is more related to the highest domain which is creating. Putting the information

or knowledge in an innovative way can be called as creating.

How a Lecture can be given in a way that the Innovative Thinking is Aroused among Students

This is the most challenging part of a lecture. Time is the most limiting factor during a lecture. During the given time, the Lecturer should cover what is meant to be taught. Therefore, using that time to build up innovative thinking among students will be a challenge. But, if it is considered very carefully, it is not a very difficult task. There are several ways of doing that.

One such effort is asking students question during a lecture, in a way that they start thinking innovatively. For an example, if the lecture is about selection of a suitable machine for some carbonated beverage production, first the Lecturer can ask the students what parameters they should check before buying the machine. Then the students start thinking about the characteristics they expect from the beverage. The machine should facilitate mixing of ingredients with carbonated water, without allowing the impregnated carbon dioxide to be released during filling.

The students will start answering about something that they have not seen before. Even if they have seen, they may not have thought about

it before. At this moment the machine is new to students, therefore, if someone can predict its characteristics means, he or she is in the beginning of the invention procedure which is creating. As Graham Gibbs explains, students may be too shy to answer to such questions, thinking their answers will look silly in front of lot of people. Therefore, the lecture must encourage students to answer and should be responsible not to humiliate them when inappropriate answers are given.

After they give their answers, the Lecturer can present the characteristics of an ideal machine and give examples. And if the Lecturer can put some drawbacks of the prevailing processes or the machines, they can be displayed, and students can be asked to suggest solutions to overcome those drawbacks. This will again enhance their innovative thinking since they seek for solutions by themselves. They can be given an assignment on this too. They can be asked to identify the current draw backs and give their suggestions to overcome them.

The Lecturer can advise them to use case studies to explain their thoughts on them, which will be more effective. Then the students will spend time, thinking to themselves innovatively find solutions. This is what the industry expects from graduates, when they start their career in the industry. They me be asked solutions for the existing problems of their factories. If the

graduates have practiced thinking innovatively before, they will surely give satisfactory answers to their future employers.

Apart from that, the lecture can ask students to create a two-way mind map on what is taught in the class room. They can be asked to summarize what exactly was taught by the Lecturer in one side, and to write if the task is done by the student, how she or he is going to do that, on the other side of the mind map. It's good to limit this work to 1 or 2 A4 sheets. Then they will try to suggest something new for every component in the mind map and it will broaden their thinking ability. Although the Lecture do not have to go through each of their work, he, she can printout students randomly, in in the next class, before the Lecture begins.

If there's a possibility of evaluation of all of their work, it will be great. With a small group this is easily possible, but if the group is large, they can be asked to create their own summaries and bind them together at the end of the semester. It can be evaluated by the Lecturer and can be given prior to the examination. This will result the student a set of summaries of all lessons, created by their own selves. Since they have spent time on that work, they may remember the contents very well too.

Besides, the lecturer can encourage the students to find more information through the internet. As Kim

Candler explains in his book "how innovators think, act and change our world", online education is one of the most successful method of teaching and learning. Online education can help students a lot, since there is little need and possibility for them to spend on national or international travel to gain access to texts and suitable teachers that were formerly out of reach. The Lecturer can give students clues on what areas they can search in the internet, to learn more about the sections being taught at the lecture.

And, it is very important to educate them to search only in the reliable sources. Since the lecturer cannot give all the available and known subject matters during the limited time, this will be a successful way. On the other hand, when the students search things in the internet, they may witness lot information, which will back their way of thinking.

Innovative thinking is not something happens to people when they do not know anything about a certain matter. To think something innovatively, she/he should possess a reliable and waste knowledge about it. For example, Sir Isaac Newton could start work on describing gravity, after an apple fell on his head, since he was a mathematician and a physicist. If he was not educated enough to explain it scientifically, he would not end up with the same result he did then.

Therefore, having access to knowledge is always good for innovative thinkers. Therefore, students should be encouraged during the lecture, to find more information about what is being taught in the class in the internet. This is very important because lack of thinking ability and, taking more time to take decisions and doing only what is known or practiced, has become an issue in today's world. Thinking out of the box will allow them to be experts in whatever the things they involve in future.

Identifying Innovative Thinkers at the Classroom and Encouraging Those Who are Not

One of the most important books written on students' creativity is "sparking students' creativity", written by Patti Drapeau. He explains that students, who are having innovative thinking patterns, express ideas other students don't think of, like to choose their own way of demonstrating understanding, ask questions that may seem off-topic or seems silly, enjoy open-ended assignments, prefer to discuss ideas rather than facts and prefer to try new ways of approaching a problem rather than accepted ways.

Other students may have different reasons, not to be such. Some are inherent innovative thinkers. Some develop it with maturity. Some may not be inherently innovative, but they can be easily guided to be innovative.

Given below are the suggestions explained by Drapeau, to facilitate students' innovative thinking:

- Provide students with: Interesting work, Challenging work, Realistic goals and time frames.
- Help students: Understand that creativity can create a feeling of disequilibrium Embrace anxiety and fear about generating "what if" possibilities.
- Support students by: Integrating creative thinking skills Scaffolding instruction rather than "rescuing" students Coaching and facilitating discussion Providing constructive feedback Differentiating instruction.
- Establish an environment that: Values different types of creativity Values Teamwork Is emotionally safe and positive.

He explains, how the learning environment helps to all the students to be creative. Lecturer should phrase the creative and responding students in the class but should never humiliate who are not. When the inactive students see the lecture encourages answering, whether the answers are correct or wrong, they may start responding accordingly. Giving students a chance to speak, by random selection may also help to encourage such students

Facilitate Student-Centered Learning at a Lecture to Encourage Innovative Thinking

George M. Jacobs *at el.* in their book "Simple, Powerful Strategies for Student Centered Learning", explain how the students should be encouraged to develop answers by themselves. They may make mistakes, but they should be corrected each time they do so, and me directed to the correct path, still allowing them to find answers by themselves.

They explain this to be done in some important ways as below:

- Asking for reasons to encourage thinking
- Let students create questions for other students
- Let them feel it is okay to be wrong or to not know
- Encourage questioning of information and interpretations presented in textbooks
- Ask for examples
- Teach constructive disagreement
- Ask students' opinions
- Give students time which shows your trust upon them and provide clues

These actions will encourage student centered learning, which on the other hand helps to improve their innovative thinking. With that they can improve planning, self-assessment, self-regulation, improve inner awareness and learning to learn. These can be called as metacognitive skills which are very important to students. The students should be given time to form

their own opinions and that should be backed by reasons and logical thinking. "Thinking, Fast and Slow", a book by Kahneman,

Nobel Prize winner in economics, describes some of the typical biases that lead us to think illogically. Logical thinking is based on everyone's perception on matters and the lecturers can influence the students logical thinking by explaining things and giving clues, without giving answers directly. Then the students will build up their own answers and then the Lecturer can evaluate whether they are correct or wrong.

Benefits the Students Get when They Think Innovatively

At the University

The students will be able to think logically and easily in the exams to develop their answers, especially in essay questions with this ability. There is some sort of exam questions to give their point of views on certain things by giving the examples. Students can use the examples which were discussed in the class room, but they can give their own interpretations and write an interesting answer, if they can creatively think.

Innovative thinking helps them to perform well at exams in that way. And also, if the student has practiced summery making, as described in an above section, they may be able to give specific answers to what has been questioned in the examination.

Besides, students will do creative work in the assignments, if the Lecturer can assign them work, in a way that they must build up the concept in the assignment, only with innovative thinking. For example, the Lecturer can ask them to suggest a novel methodology for an existing process, service or product, depending on the subject area. If the assignment is about describing something existing, the student can be advised to do it in a novel way other than using the typical method of report writing. For an example the students can be encouraged to use tool such as mind maps, fish diagrams etc.

Apart from that, students will be able to perform well at oral examinations/viva. They are questioned real time, and only if they have a creative mind, they can combine what is in their mind and develop the answer according to the question and come out with a correct answer quickly. If they are asked about their suggestions to a certain question, their innovative thinking will help them to develop and present the best possible answer.

At the Work Place After Graduation

There will be a day that the students graduate and seek for jobs in certain places. When they face interviews, their thinking plays an important than any other performance. Because giving answers to questions is secondary, prior to that they should formulate a wise answer through creative and selective thinking which the base of that answer is. Sometimes the paper qualifications do not matter, but the mannerism of responding to the questions the interviewer ask, do.

And, the graduates have to perform well when there are problems at their working places and sometimes it may be their job responsibility to come up with the best solution. For an example, if there the graduate is working at a research institute where the customers" projects are accepted and completed, they may definitely have to be innovative.

For example, if customer comes up with a new product idea to get it formulated by the research institute with the technical knowhow and the equipment suggestion, the researchers must decide on what ingredients they need to use, in what way, with what kind of an equipment. Since it is a novel product idea, the graduate must think innovatively to come up with the best solution. If he/ she has the practice of thinking innovatively in the university, these kinds of things will not be challenging for them.

Contribution of Innovative Thinkers to the Country

To keep the nation going forward, the population should act innovatively. This is applied in every place we live. It can be at home, at school, at university, at work place or any other place. If people can only do what is taught and how they are practiced doing things at certain occasions, everybody will be in trouble, if a deviation happens. To find a solution for such situation, people should be able think out of the box.

The only conditions that apply are rules, regulations and laws in the country. Within that frame work, people can think creatively and act accordingly. If only new

things are being invented and if only new ideas are generated, people can go towards the development and sustain in the competitive world. This is the unique capability of humans when compared to artificial intelligence. Only humans can go beyond what is already there in the brain system.

Higher education, all the students should be practiced thinking out of the box, because they will be the future generation who owns the world. Fixed mind sets may not be able to win the increasing competitiveness of the world. Thinking is better, but innovative thinking is always the best, because an innovative thinker can face any challenge successfully.

Effect of Rewards and Welfare on Performance of Teachers in Higher Education

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Job performance of the teachers is highly concerned in the current society. Academic performance of students also depends on the influence of teachers' teaching effectiveness. Though the monetary rewards are the most common incentive in performance related pay, other incentives such as promotions, public recognition for outstanding teachers can also be considered.

The influence of teachers' teaching effectiveness on the learning outcome of the students can be measured through academic achievement of students. Therefore, effective teachers should produce students of higher academic performance. Poor academic performances of students have been linked to poor academic performance of teachers. Although teachers' strong effect would significantly influence student's academic achievement, other factors such as socio-economic background, family support, personality of students, examination scores affect either positively or negatively. Thus, student's grades and test scores are not good indicators for evaluation of teacher performance.

Types of Reward Systems

Three types of performance-based reward systems for teachers have been identified.

1. Knowledge and skill-based compensation scheme
2. Merit pay: adjust salaries upward or provides compensation for higher levels of performance
3. Team based performance rewards: normally associated with completing a particular task or achieving a prescribed performance target.

One of the largest benefits of performance-based rewards is an increase in the motivation of teachers. It is argued that reward system increases teacher motivation by adequately rewarding. This perspective links the attitude of teachers to student's outcomes by arguing that motivation and skills of the determine salaries, teacher quality will be improved. A reward system on the other hand increases employee retention, performance, productivity and morale.

Arguments Against Performance-based Rewards

It is argued that teacher commitment and knowledge is often a better guide for good instruction than observing and assessing their performance. Some analysts argue that the performance of student is beyond the control of a teacher. It is a combined effect of vital roles played by the school, the principal and the family should be acknowledged. It is also argued that teacher's morals can be reduced because merit pay creates unfair competition between teachers. Teachers who have not

been rewarded can question the fairness of evaluation, as there are frequently no transparent criteria.

The majority analysts argue that rewards system have a negative effect on teacher performance. Further, the teacher who was not been rewarded affect their performance which badly reflect the student's performance.

Reward is the benefit that arises from performing a task, rendering a service or discharging a responsibility. The main reward for performing work is salary or wages. Apart from the salary and wages many employees offer pension benefits, paid or subsidized lunch, child education, health insurance, official car, beneficial loans, bonuses and many more. Reward system is an important tool that managers use to influence employees' motivation. That means managers use these tools to motivate employees and attract them. Reward systems motivates employees to perform better. Job evaluation is an essential process for a reward system. Reward system is incomplete if job evaluation is not done.

Conceptual Framework Showing the Possible Effect of Reward System on Teacher Performance

The Figure 1 shows independent variables being qualifications, experience, promotion, incentives and merit=based awards while the dependent variable is the teacher performance. The traditional rewards system that exists in organizations include qualifications, experience, promotions, Incentives and occasionally the

merit-based award. It is expected that effective application of motivational factors would enhance teacher performance. However, many of these factors have been adopted in the education system but the performance of the teacher is not improved.

Students' academic score is not the only predictor of teacher's effectiveness, researchers have found other ways of evaluating teachers' effectiveness. Student's administrators, colleagues and the teacher's self-evaluation have been used to evaluate teachers' effectiveness. Researches idea in student's rating of their teacher effectiveness should never be the only measure of teachers' effectiveness.

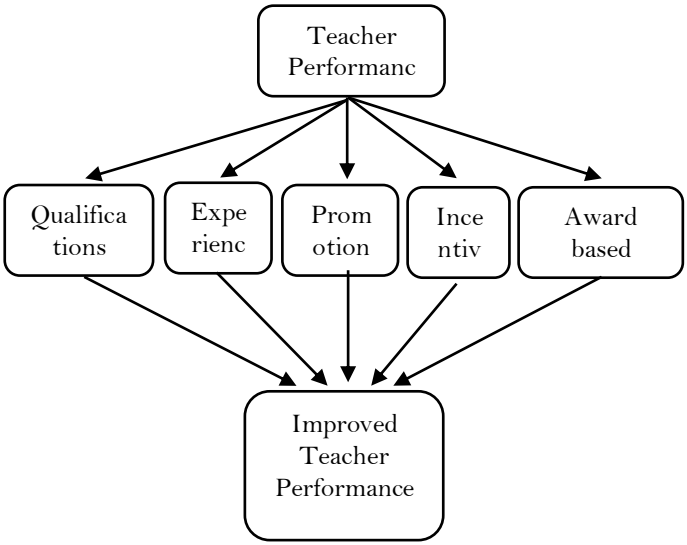

Figure 1: Conceptual framework showing the possible effects of reward systems on teacher performance
Source: Hertzberg (1996)

It has been observed that reward system based on output has two advantages over input-based pay in terms of efficiency. Individual reward system provides some incentive for the teacher to do the right thing.

Types of Reward Systems

Three main types of performance-based reward system have been identified.

Knowledge and Skill-based Compensation Schemes

Teachers are compensated for specific knowledge and skill required to meet higher expectations for performance. This may be in the form of formal certification undertaking specific professional development units. Or maybe they are given additional work such as mentoring or curriculum development.

Merit Pay

The second type of reward is 'Merit pay' which implies, Pay for the performance. In this system adjust salaries upward or provide compensation for higher levels of performance. For this type of system, a standard for individual performance is set, such as increased student achievement. If a teacher is exceeding this standard, they receive a bonus, or a salary increase. The main argument in favor of merit pay system is that it can motivate individuals by recognizing effort, achievement and rewarding.

Annual Salary Increments

In most current systems annual salary increase is the system adopted rather than their performances. Some of the researchers believe that the salary scale system does not evaluate the teacher performance. Analysts further says non-merit-based system is unfair for exceptional teachers because they are judged on and inefficient criterion. It is argued that talented teachers can leave the system because excellence is not rewarded. When performance is rewarded, and salary is increased they are retained in the system performing better way.

A large body of literature argues that reward systems have a negative effect on teacher performance. The American Federation of Teachers Union in USA argues that merit-based rewards created divisions between teachers. In this system some were classified as winners and some were classified as losers.

Challenges in Implementation of Performance-based Rewards

One of the major difficulties in the implementation of performance-based reward system is existence of teacher unions who have been opponents of these programs. Unions produces a range of arguments to reject attempts to introduce reward systems, particularly focusing on doubts about accurate evaluation of teachers. Radical reformation can be difficult to implement where union action is existing.

Budget constraints at most universities do not permit to introduce proper rewarding system for better performance. There are two reasons which discourage rewarding system.

- Existing pay structure, sabbatical, seniority policies do not link with rewards system.
- Powerful faculty unions, timid administrations, government indifference bad mind set penalize excellent and prevent reform.

Rewards and performance in Canadian universities in general, adopt rigorous, measurable, impartial and transparent systems for evaluating the performance of academics. However, it is difficult to recognize and reward professors who perform the above average or to identify under – performers.

The University of Manitoba had abandoned its competitive merit pay system in the early 1980's. Performance – based awards are currently being practiced.

Faculty union executives have bargained the most effective performance measures, rewards. Small special funds have been allocated to reward superior performance, however, union resistance has prevented their being increased to reward and retain "star" professors. Historical evidence has shown that the process of selection of best performers in gender related having more priority for male than females.

The balance between rewards for teaching and those for research now penalize the latter. The sensor teachers

who involve in faculty expanding work are rated much higher rate than more juniors who do not contribute to expansion activities of the faculty.

The following recommendations have been made to attract the reward system and to reverse the academic brain drain. The current evaluating system must be replaced with rigorous and objective evaluations. Performance and rewards must be linked closely. One way of doing this is marinating a baseline salary and cumulative performance bonuses.

Poor performers would receive no bonuses and be placed in probationary watch. Collective agreements should be replaced by flexible private sector style contracts with incentives for drive, imagination and productivity. Teaching and research should be evaluated separately. In this case teaching performance and research performance are evaluated separately and both can equally be rewarded.

University tenure systems should be replaced with renewable performance – based contracts. Traditional life- time tenure should be limited to truly exceptional scholars. Sabbaticals should not be automatic but rewarded in a system of unrestricted results-oriented competition.

Individual ability, not pay equality, should determine questions of academic remuneration. Rewards for the performance can be affected in Universities in variety of ways. These include;

- Annual percentage pay rise to acknowledge the length of service and to match the cost of living increase.
- Annual cumulative increase based on satisfactory performance.
- A pre- determined number of non – cumulative annual bonuses (merit awards) to top performers.
- Special salary increases, to outstanding professors to rewards their performance to prevent them moving to other institutions.
- Special funds to correct salary anomalies.
- Promotion through the ranks, full professors marked by a higher salary level.
- Travel funds and expenses.
- Periodic yearlong paid sabbatical to allow professors to work full time on important research projects.

Teacher Performance Evaluation in Higher Education Institutes

Higher education plays and important role in our societies. It produces student for employment or for academic and research performance. Teacher evaluation is an essential outset to determine the performance each faculty member in many institutions. The rigorous evaluation of teaching is one of the most significant characteristics for improvement in teaching practices. The evaluators of University Teachers are students, teachers (Colleagues) and Administrators.

Use of Students as Evaluators

Students are the daily observes of teachers, hence they are the best evaluators. In this system not only limited to the classroom performance but also judged their role as academic advisors and student councilors. Student's opinion about the teacher can be taken through an interview, discussion with student about teachers and giving a questionnaire.

Of the method tested use of questionnaire has been considered as the common method of teacher evaluation. The questions included in this type of evaluation must only a perception of teaching effectives.

Teachers (Colleagues) can also be used as evaluators. Studies showed that subordinate and co – worker ratings are particularly valuable because its providers different and significant perspectives on rates, skills and behavior.

It also informs people about the effect of their action on others in the work place. Rating by multiple rates providers adequate assessment of performance. Faculty self-evaluation method is more useful as compared to other methods to reflect the weak aspects of instruction and the skills of classroom management.

Administrators can be used for evaluation of teacher performance. Normally, Head of the department writes performance report which includes data from all sources and his own observation during the evaluation period.

Their departmental head is the manager of his department and is responsible for his department, faculty performance and development. In this method of evaluation information is not gathered from single source like student evaluation and peer evaluation but composite data is collected from different levels of institution.

Process Recommendation of Staff Promotion Policy for Higher Educational Institutes

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Purpose of this paper is to study the common features of higher education promotion policies adapted by certain international institutions and to make a process recommendation to the Sri Lankan higher education system to ensure consistency, transparency and fairness. The identified policies are to be recommended to all continuing and fixed-term employees, who seek promotion to their respective levels. In pursuit the vision to be recognized nationally and internationally, the universities should have a holistic approach of recognizing academic achievement, the staff should be given equal opportunities to progress of their career advancements based on merit, performance and achievement, relative to the opportunities.

Career promotion refers as the vertical movement of an employee within the organization, may be the result of an employee's proactive pursuit of a higher ranking or as a reward for good performance, more often associated with financial benefits, status and responsibilities. Career development provides a supportive climate for organizational development. Staff

development is a monumental part of an organization's activities[1]. Significant and fair opportunities of promotions to employees create a work friendly environment resulting a sustainable productive contribution.

The process activities targeting career promotion plays a vital role in maintaining the balance between the needs of the employee and the organization's objectives. Career development is defined as "an ongoing, formalized effort by an organization that focuses on developing and enriching the organization's human resources considering both the employees' and the organization's needs"[2] .

Career can be described as a series of positions occupied by an individual throughout his or her lifespan. It includes experience and skill acquisition of a person of a specific work field. The career of individuals is progressing with the knowledge, skill, desire to work and with their training related to their job role. In process of career development, which deals with improving human relations and interpersonal skills, the staff are given opportunities to grow with the organization so that they can be fitted for available higher positions within their capacity.

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Promotion of Academic Staff

Academics are regarded as 'self-motivated', working within a highly favorable environment which enables them to pursue their aims in teaching, research and other relevant activities. Academic promotion to be offered in accordance with the principles outlined the procedure such as,

- Strategic alignment
- Merit based selection
- Achievement relative to opportunity
- Equity and non-discrimination
- Confidentiality, transparency and fairness

Globally, academic institutions recognize and reward academic staff for demonstrated achievement and high performance in relevant areas of academic endeavor and provide an identifiable career promotion pathway to all staff, based on "**Boyer's four areas of scholarship"**[3].

It creates flexible career pathways, by allowing individual academics to work to their strengths. Our recommendation is based on this criterion which allows staff to demonstrate the alignment with the values and broader contribution to the institution, community and academe. Boyer (1997) proposed an expanded definition of "scholarship" within the position based on four functions that defines a "Profile of a Quality Faculty Member "include; "discovery", "integration",

[3] Boyer, E. L. 1997, Scholarship reconsidered: Priorities of the professoriate. Carnegie Foundation for the Advancement of Teaching, San Francisco: Jossey-Bass.

"application" and "teaching". This framework will lead to personalized and flexible criteria using "creativity contracts" that emphasize quality in academe.

The Scholarship of Discovery/Research

The research contributions are critical to the vitality of the academe. The scholarship of discovery includes original research that advances knowledge and understanding, the one most closely aligned with traditional research contributes to the intellectual climate of a university.

Integration - Integration, focuses on making connections across disciplines that it is useful beyond single disciplinary boundaries and to be integrated into a larger body of knowledge.

Application - Includes activities that link universities with society, the translation and application of knowledge and discovery to the broader community; connecting students with, and embedding learning into applied practice Application, focuses on using research findings and innovations to remedy societal problems. This category included the service activities that are specifically tied to one's field of knowledge and professional activities. Beneficiaries of these activities include public, commercial entities and professional associations.

Teaching - Teaching is the central element of academe which allowed to maintain the continuity of knowledge by facilitating active learning; encouraging and

equipping students with critical, creative thinking; instilling the ability and passion for learning, and actively linking all forms of scholarship" (Borra, 2001).

This study proposes to include "Leadership and Citizenship", as an additional area which certain universities are employing in academic promotion criteria furthermore to the four areas of scholarships as defined by Boyer (1997).

Academic Leadership and Good Citizenship

This area measures the broader contribution of staff to the life of the discipline, school, faculty and University which is demonstrated through leadership of subject areas, staff groups or other developments; through supporting and helping to develop members of staff; through participating and contributing to working groups, committees and other bodies; and through generally demonstrating a sense of collegiality.

Excellence in Academic Leadership may be demonstrated in a variety of ways, including:

1. Academic leadership in the discipline and in the University
2. Professional activities and contributions to the society outside the University
3. Good citizenship (a willingness to be involved in all aspects of university life such as attendance at committees, involvement in outreach activities and volunteer activities).

Whilst it is not a requirement to demonstrate excellence in relation to leadership and good citizenship, any individual who is deemed unsatisfactory in this area will not be eligible for promotion.

Academic Level Classifications

Predominantly, universities have adopted a set of position classification standards (PCS) for academic staff, which provide an adequate basis to differentiate between the various levels of employment and define the broad relationships between classifications (The Macquarie University c.2017). We propose to adapt similar classification system to the higher education institutions in Sri Lanka.

1. Level A Academic - Associate Lecturer

Expected to make contributions to the teaching effort of the institution, particularly at undergraduate and graduate diploma level and to carry out activities to develop his/her scholarly, research and/or professional expertise relevant to the profession or discipline.

Skill Base - Level A academic will normally have completed four years of tertiary study in the relevant discipline and/or have equivalent qualifications and/or professional experience.

2. Level B Academic – Lecturer

Expected to make contributions to the teaching effort of the institution and to carry out activities to maintain

and develop his/her scholarly, research and/or professional activities relevant to the profession or discipline.

Skill Base - Level B academic shall have qualifications and/or experience recognized by the institution as appropriate for the relevant discipline area. In many cases a position at this level will require a Doctoral or Masters qualification or equivalent accreditation and standing. In determining experience relative to qualifications, regard is had to teaching experience, experience in research, experience outside tertiary education, creative achievement, professional contributions and/or to technical achievement.

3. Level C Academic - Senior Lecturer

Expected to make significant contributions to the teaching effort of a department, school, faculty or other organizational unit or an interdisciplinary area. An academic at this level is also expected to play a major role in scholarship, research and/or professional activities.

Skill Base - Level C academic will normally have advanced qualifications and/or recognized significant experience in the relevant discipline area. A position at this level will normally require a Doctoral qualification or equivalent accreditation and standing. In determining experience relative to qualifications, regard shall be had to teaching experience, experience in research, experience outside tertiary education, creative achievement, professional contributions and/or to

technical achievement. In addition, a position at this level will normally require a record of demonstrable scholarly and professional achievement in the relevant discipline area.

4. Level D Academic – Associate Professor

Expected to make a significant contribution to all activities of the organizational unit or interdisciplinary area and play a significant role within their profession or discipline. Academics at this level may be appointed in recognition of distinction in their disciplinary area.

Skill Base - A Level D academic will normally have the same skill base as a Level C academic. In addition, there is a requirement for academic excellence which may be evidenced by an outstanding contribution to teaching and/or research and/or the profession.

5. Level E Academic – Professor

Expected to exercise a special responsibility in providing leadership and in fostering excellence in research, teaching, professional activities and policy development in the academic discipline within the department or other comparable organizational unit, within the institution and within the community, both scholarly and general.

Skill Base - A Level E academic shall have the same skill base as a Level D academic but will be recognized as a leading authority in the relevant discipline area.

Assessment Criteria

The promotion committee will assess the applicants for promotion in each category (5 area of excellence) for which they claim achievement. Assessment in each category will have four levels of achievement:

a) Not achieved/Not applicable
b) Achieved
c) Superior
d) Outstanding

Once a level of achievement has been determined, points will be allocated as per the following scale to determine an overall score:

a) Not achieved/Not applicable- 0 points
b) Achieved -1 point
c) Superior- 2 points
d) Outstanding- 3 points

In academic promotion, to be promoted to Levels B and C, an applicant must demonstrate that they should be awarded at least 8 points by the relevant Promotion Committee. The applicant must achieve Outstanding (3 points) in at least one of the five categories.

The applicant must be awarded at least Achieved (1 point or above) in the demonstration of Leadership and Citizenship. To be promoted to Levels D and E, an applicant must demonstrate that they should be awarded at least 9 points by a University Promotion Committee. The applicant must achieve Outstanding (3 points) in at least one of the five categories. The applicant must be awarded at least Superior (2 points or

above) in the demonstration of Leadership and Citizenship.

There is no requirement for applicants to score across all five categories. The system should allow flexibility in way of the threshold score for the promotions. The only mandatory category is Leadership and Citizenship where the applicants must score some points. The focus should be on quality of achievement, not on the number of examples/indicators that are covered by an applicant. The promotions committee apply a holistic approach to the assessment of applicants, considering the applicant and their achievement as a 'whole person', and relative to opportunity.

The bandings and scores should be used to summarize the description of achievement in relation to the criteria.

1. Score for outstanding evidence - 8, 9 or 10
2. Score strong evidence -5, 6 or 7
3. Score clear evidence -3 or 4
4. Score insufficient evidence - 2
5. Score clearly unsatisfactory-1

Promotion of Professional Staff

Higher Education non-academic support staff also known as professional staff play key roles in the University's administration, research, care systems and public service missions. The success of academic activities is largely depending on work efficiency and the engagement of the professional staff members by providing them a favorable climate to work with. But this would not have happened unless professional staff

facilitated the change, the vertical movement within the organization, like that of academic staff. The promotion scheme of professional staff program strives to provide a supportive framework within which professional staff employees are treated equitably, serve as valued contributors to the University and its diverse programs, achieve their career goals, and fully participate in the benefits of their employment.

Non-academic staff promotion is defined as a staff member's change from a position in one classification to a position in another classification having a higher pay grade, or the reclassification of a staff member's position from one class to another at a higher pay grade. An employee may be promoted to another classification as the result of being the successful selection criteria and procedures, which are defined in the agreements selected based on qualifications and ability to perform the required job duties. The classification level for a position is set when the position is created to reflect the work required and duties and responsibilities.

Higher Education Worker (HEW) Levels

We suggest a scheme of Higher Education Worker (HEW) levels ranging from HEW 1 to 10 which is adapted by certain international institutions. These levels are based on qualifications, task level and responsibilities and are mapped across the higher education sector. An employee may be promoted to another classification as the result of being the successful bidder on a position that has been posted pursuant to the promotion scheme.

1. Administrative, Clerical & Secretarial

i. Levels 1-3 Administrative Assistant (Function/Specialization)
ii. Levels 4-6 Administrative Officer (Function/Specialization)
iii. Level 7+ Senior Administrative Officer (Function/Specialization)

Examples:

- Administrative Assistant (Education)
- Administrative Officer (Finance)
- Senior Administrative Officer (Human Resources)

2. Technical, Educational Technology & Computing

i. Levels 1-3 Technology Assistant (Function/Specialization)
ii. Levels 4-6 Technology Officer (Function/Specialization)
iii. Level 7+ Senior Technology Officer (Function/Specialization)

Examples:

- Technology Officer (Science)
- Senior Technology Officer (Information Technology) (relevant name as appropriate)

3. Library

i. Levels 1-3 Administrative or Library Assistant

ii. Levels 4-6 Library Officer or Library Technician
iii. Levels 5-6 Librarian
iv. Level 7+ Senior Librarian

Higher Education Worker (HEW) Classification

HEW Level 4

Skill Base - To perform duties at level 4 skill level requires, completion of an associate diploma level qualification with relevant work experience or a certificate level qualification with post-certificate relevant work experience or,

an equivalent level of knowledge gained through any other combination of education, training and/or experience to be decided by the promotion committee.

Task - Perform a variety of tasks that require a sound working knowledge of relevant trade, technical or administrative practices, include limited creative, planning or design functions, and require an awareness of the relevant theoretical or policy context.

HEW Level 5

Skill Base - To perform duties at a skill level that requires, completion of a degree without subsequent relevant work experience as a graduate upon appointment, or completion of an associate diploma with a range of experience including at least 2 years subsequent relevant work experience, or Completion of a certificate or a post-trades certificate and extensive

subsequent relevant experience, or an equivalent level of knowledge gained through any other combination of education, training and/or experience decided by the promotion committee.

Task - Perform tasks that require a knowledge and standard application of theoretical principles, procedures and techniques at the level of a less experienced graduate working in their field of expertise, or depth or breadth of technical trade or administrative expertise, including a sound appreciation of the advanced technical concepts, or relevant policy issues, in a functional area or to a set of related activities.

HEW Level 6

Skill base - To perform duties at a skill level that requires, completion of a degree, normally with subsequent relevant experience to consolidate the theories and principles learned, or extensive experience (combined with specialized training and/or Diploma or Certificate level education), leading to either the development of specialist expertise or to the development of broad knowledge, in technical or administrative fields,

or an equivalent level of knowledge gained through any other combination of education, training and/or experience decided by the promotion committee.

Task - Perform a range of assignments that are guided by policy, precedent or objectives and, where relevant, by professional standards. Positions at this level require

a conceptual understanding of relevant policies, procedures or systems and interpretation in the application of policy and/or precedent. In technical and administrative areas, have a depth or breadth of expertise developed through extensive relevant experience.

HEW Level 7

Skill Base – To perform duties at a skill level that requires, a degree with a depth of subsequent relevant experience to consolidate and extend the theories and principles learned, or extensive experience and management and or specialist expertise, or an equivalent level of knowledge gained through any other combination of education, training and/or experience decided by the promotion committee.

Task - Apply substantial theoretical and technical knowledge and experience to a range of issues and circumstances requiring considerable independent analysis and interpretation. In addition, may provide consultancy advice to others, and/or be recognized as an expert in a specialized area of theoretical, policy or technical complexity.

HEW Level 8

Skill Base – To perform duties at a skill level that requires, a degree with substantial extension of the theories and principles, normally requiring extensive relevant graduate experience, or a range of management experience, or postgraduate qualifications with relevant

experience, or an equivalent level of knowledge gained through any other combination of education, training and/or experience decided by the promotion committee.

Task - Perform tasks requiring the integration of substantial theoretical (or policy) and technical knowledge to manage programs, or develop, review or evaluate significant policies, programs or initiatives, or develop or apply new principles and technology, or provide professional or consultancy services with recognized standing across or outside of the University.

HEW Level 9

Skill Base – Perform duties at a skill level that requires, extensive management expertise and supporting experience, or Program management and other specialist expertise, or Postgraduate qualifications and extensive relevant experience or an equivalent level of knowledge gained through any other combination of education, training and/or experience.

Task - Perform tasks involving a significant creative, planning or management contribution to the development or operation of major professional, management or administrative policies or programs, and responsibility for or impact on significant resources.

HEW Level 10: Senior Management Titles (Directors)

The title of Director is a restricted title determined by the Vice-Chancellor and may be used at Level 10 or when referring to an executive staff member, as a

director of an organizational unit or when referring to the head of an approved Institute.

The Promotions Committee

The role of the Promotions Committee is to evaluate the case for promotion based on the documented evidence in the form of references, curriculum vitae, personal statement, and head of institution statement and to determine scores for research/scholarship, teaching and general contribution criteria.

Staff Development Programs for Academic Support Staff in Higher Education Institutes

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Introduction

For several reasons, the number of staff employed as Academic Support Staff (ASS) is continuously increasing across the whole higher education sector. In Sri Lankan higher education institutes, their contribution is extremely important in every aspect of teaching and learning process. Therefore, they can be identified as one of the key components of higher education workforce.

Academic Support Staff

In Sri Lankan universities, the term ASS can be used to describe any person who involved in university teaching and learning process under temporary basis. It includes temporary and assistant lecturers, demonstrators, instructors etc. Predominantly, the ASS has been recruited from recently passed out graduates (students awaiting results of a final degree examination can also be recruited), interested in entering academia, with a smaller number having industrial exposure to the

related subject area. Generally, they are recruited by a competitive interview process in which their outstanding academic performance and initial teaching abilities are considered as the main selection criterions.

Roles and Responsibilities of ASS

The academic support staff has more than one role to play in teaching and learning process. Their roles and responsibilities can be significantly varied among different universities, within different faculties and departments. Their basic duties may include conducting or assisting the lectures, delivering tutorials or laboratory or field practical sessions, grading assignments and tutorials, leading or facilitating class discussions, setting and grading practical exams. Particularly, they act a mediatory role in-between students and permanent academic staff members and their contribution is vital in filling the gap between theory and practical knowledge of students.

Importance of Staff Development Programs for Their Advancement

The significant contribution of ASS on teaching aspect at universities has been largely unrecognized and undervalued. A little or no attention has given to their carrier management, support, professional development and integration into the university education delivery process. It can be a significant risk to achieve the expected outcomes of students learning process, which depends on the quality of teaching and learning in universities.

The newly recruited ASS may have limited or no prior teaching experience or related qualifications. They may require some sort of support and training in their transition to university teaching. Therefore, staff development program for ASS can be considered as an integral part their carrier. Specially, almost all the permanent staff members have initiated their academic carriers as ASS members and experience gained by working as ASS member is considered as an added qualification for their recruitment process. Moreover, the accreditation process for professional degree courses requires the development of teaching skills in entire academic staff, including ASS.

Key Areas to be Addressed under Staff Development Programs for ASS

It is important to highlight the role, and potential, of staff development programs in ensuring and enhancing quality learning and teaching with ASS. The existing variations in roles of ASS in different institutes suggest multiple ways to train them. Therefore, the staff development program should aim to be relevant to the universities' specific needs and resources and to the requirements of the institution and need to be tailored to suit the institution.

Considering the temporary nature of their employment and practical difficulties, a practical introductory training session is more appropriate rather than a formal qualification based lengthy theory-based staff development program. At the same time, establishment of on-going support mechanisms will be more useful in

training and managing ASS. Under this program, permanent staff members with appropriate staff development qualifications and experiences can be assigned as supervisors to each ASS member to assist for their professional development, employment stability and improving working conditions. They would benefit from mentoring in the form of personal support, feedback on teaching and assessment marking. Few practical training workshops, online web-based facilities (Ex. Apps), training manuals, or combinations of these set-ups can be used to further enhance their skills and competencies to become more knowledgeable and confident in the role of teaching.

Following key areas have been identified as main concerns of any staff development program for ASS to achieve the expected quality enhancement of teaching and learning process.

- Core teaching and learning and assessment strategies
- Basic technical and resource management strategies
- Roles and responsibilities of ASS
- University rules and regulations including examination procedures
- Personal and professional career development and assisting students to resolve their academic and personal matters

Moreover, the ASS must have a better understanding about the university graduate attributes, which need be used practically to guide the planning and development of teaching, knowledge transferring and all the other

activities to ensure that the students of the university acquire the experience, skills and knowledge necessary for graduates in today's complex global environment.

Prior to develop a staff development program, it is required to conduct a proper need assessment to identify the existing gaps in the teaching and learning process of ASS. The comments of all the stakeholders such permanent academic staff members, undergraduate students, subject specialist, professionals in staff development filed as well as ASS should be considered to identify key areas to be addressed in the program. The challenge is to cover all these aspects within a limited time duration.

Core Teaching and Learning and Assessment Strategies

The students' learning processes is largely depending on the capabilities of the academic staff and their willingness to improve their teaching and learning skills. Therefore, under the staff development program it is important to guide the ASS in order to acquire the skills and competencies of quality teaching through staff development, which included specific learning and teaching strategies (i.e. student-centered learning methods), understanding student learning, communication and presentation skills, techniques for group facilitation, managing and motivating students, student feedback and assessment procedures.

This part of training program should be mainly oriented toward teaching core skills. It can be

complemented by more discipline-specific subject training according to the requirements of ASS as well as the respective institute.

The program must be carefully planned to provide more effective practical based training on essential teaching methodologies within a short period. It should cover following teaching and learning techniques, which are predominantly used by ASS for delivery of educational content.

- Field and laboratory practical sessions
- Tutorial discussions
- Academic presentations
- Simulation or role-plays
- Conducting small group activities

Basic Technical and Resource Management Strategies

More technology-based teaching and learning has been emerged as a highlighting trend of modern higher education. It creates new approaches to widen teaching and learning opportunities for university students. That strategic integration of technology also makes it easier for teachers to access and analyze real-time student learning data so that teachers and students can monitor student progress and adjust instruction as necessary to suit students' evolving needs. Therefore, the traditional face to face education system has gradually shifted to more blended learning approaches which facilitates more flexible learning experiences.

A blended course can be introduced to the syllabus as a 'hybrid' course where some content is specifically delivered online and perhaps one day per week the class meets face-to-face. Or else the blended course can be a traditional face-to-face course with some substantial use of online tools.

In a blended learning environment, the teachers play a key role in encouraging students towards achieving expected outcomes. Therefore, ASS must be trained to maximize student achievement in a blended classroom. Therefore, the development of required proficiency related to information, communication technology supported learning, and teaching skills in ASS has been highlighted repeatedly.

The ASS should also be strengthening with required competencies and skill to transform the traditional classroom in to more university virtual learning environment and e-learning forums as well as it is necessary to increase competence in technology use within classroom.

For instance, the "Google class room" is one such online learning platform which facilitates to create virtual class room and forms an effective work flow for teachers and students to organize teaching and learning activities as well as assessments. It gives opportunities to conduct group discussions, question and answering sessions while sharing videos and other subject related materials. These types of novel methods help to overcome the issues related to time limitations of traditional learning methods.

Roles and Responsibilities of ASS

Significant workloads and lack of clarity regarding their role in higher education are identified as major constraints in professional and career advancement of ASS. Therefore, the roles of ASS must be clearly defined and documented. It would be beneficial to provide better understanding regarding their roles and responsibilities before they enter to the university teaching.

Personal and Professional Career Development and Assisting Students to Resolve Their Academic and Personal Matters

ASS values and seeks professional career development opportunities; however, formalized professional development for ASS is rare in present context. It is important to identify the ASS members intended to continue to work in academia. Those who expressed a need for professional development to bridge a pathway for gaining permanent academic positions should be given opportunities to obtain formal long-term theory-based staff development qualifications while support to improve their ongoing teaching & engagement.

Students often maintain direct contact with ASS and they become more influential to students' activities. Students tend to seek the support from ASS rather than permanent staff when they need additional support. Therefore, this staff development program should be equipped with basic mentoring and counselling components. It will facilitate ASS to grow their roles as

effective counsellors and mentors. Especially they will provide adequate support to young undergraduate from different backgrounds for grooming up their personalities under educational environment.

Furthermore, the existing teacher evaluation system can also be widened to assess the ASS by self-evaluation, peer tutor evaluations, student feedback, and classroom evaluations methods. Among them student feedback has long been recognized as the most important predictor of student learning and satisfaction

A properly designed staff development program will improve teaching skills of ASS and enable them to build up more effective communication and student management skills This will increase their confidence levels and ultimately it will improve their job satisfaction as well.

Career Development for Performance Enhancement of Non-Academic Staff in Higher Education Institutes

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Prominence of Non-Academic Staff

With the rapid changes in the overall systems of the country, with respect to socioeconomic, demographic, and technological aspects, a high demand for the highly educated, skilled work force has been created to cater for the requirements of the technically demanding working environment. Therefore, career advancement and career development have been recognized as crucial requirements, which influence the career growth opportunities that remains as a key determinant of employee–organizational relationship, irrespective of the type or the nature of the organization.

Development of physically, socially, intellectually and mentally trained employees through different career development procedures, remains highly essential in maintaining high levels of productivity. A properly precast training could effectively mould human resources of an organization to perform effectively and efficiently, reassuring that the human resources are the most valuable assets of the organization.

In the higher education sector of Sri Lanka, two broad categories of employees could be recognized as academics and non-academics. In general, academics maintain the higher position and concern in the society, apart from being at upper ranks in the management hierarchy of the organization. Regardless of the level or position in the hierarchy, both these parties are equally important for accomplishment of the aims of the universities. In general terms, non-Academic staff can be termed as the professional employees, those who do not perform an academic employment function at educational institutes, yet significantly contribute towards the prospect of the universities.

The contributions of non-academic staff highly influence the smooth functioning and student learning at a University. While the academics guide the students academically and in research, the non-academic staff make an equally important contribution by performing vital roles to ensure success of the students by providing many critical supports and operational services. They are there not only to identify devastating issues, but also to provide solutions for fixing such issues. In order to attain the maximum productivity, the career of non-academic staff category must be strengthened and valued through a productive and object-oriented career development process.

As the non-academics play an important role in higher educational institutes. Certain specific qualities such as passion, empathy, adaptability, tolerance, flexibility, common sense, fair-judgment, creativity, innovation, mutual respect, intellectual curiosity, teamwork,

responsibility, stress management, leadership, social activities, professionalism, integrity, reliability are expected from them along with the technical skills required for their positions. In order to strengthen the career of this employee category, the objectives of staff development processes should be aligned with the above requirements and must provide modules to enhance the above-mentioned qualities, which address the meta cognitive skills, technical knowhow and soft skills of non-academic staff.

A proper and comprehensive information analysis on needs and factors affecting the career development, would lay down the basis of a successful career development program. Nevertheless, career development strategies with the above alignment that aim to cater for the workforce projections, remain as the key to a stronger workforce with better qualities in higher educational institutes.

Theoretical Consideration

A career development program should be facilitated with a proper need identification process conducted based on three major theories, namely trait and factor theory, ego identity theory and acquired needs theory. The Trait and Factor Theory suggests that differences among individuals as well as their occupations, should be respected along with individual differences among people. The theory sets out to counterpart people and the occupations with respect to their capabilities, intelligence, interests, attitudes, talents and capacities. Further, it also emphasizes that the needs and values of

an individual can only be fully comprehended, when they are matched with jobs which are relevant and fitting to such needs and values.

The selection of a career must go through following basic steps.

- A perfect understanding of the ambitions, aptitudes, abilities, interests, resources, limitations and their respective reasons.
- Possess a sound knowledge on visions and requirements of different job roles and positions.
- Selection of a good match in the career after a clear reasoning of above mentioned two factors

This theory therefore states that if an individual's personality is carefully observed, better prediction can be made on his career behavior.

According to the Ego Identity Theory, there is an undeniable association in personality and career in a organization, where the process of career development is a part of a continuing process of differentiating ego identity. This implies a great impact on career development based on the equilibrium between vocational goals, needs of individuals and the society, along with personality characteristics of the individual. This theory presents a framework for modeling a career based on differentiation and personality integration, as one come across a work-related problem. Accordingly, a decision that an individual makes in relation to his/her occupation, daily activities, forms the foundation and framework of the career development.

Based on the Acquired Needs Theory of McClelland, it is assumed that "needs are acquired or learned on the basis of our life experiences, where there will be a motivation for a person to engage in a behavior to satisfy a strong need for striving personal achievement to do something better or more efficiently than in has been done before". In any organization, performance is related with the concepts of ability, opportunity and motivation, where employees are considered as the key elements of the organization that determines the success or failure of it, through their performance. With respect to the specified organizational environment mentioned here, a systematic development of skills, attitudes and knowledge of non-academic staff, is required to perform well in any given job at higher educational institutes.

Despite of that when reviewing the strategic plans of universities, it's evident that a career development process with an objective of increasing the productivity of non-academic staff is not present in Sri Lankan scenario. Therefore, a primary framework to coordinate the professional development to enhance the career consciousness of non-academic staff is essential, in terms of work fulfilment, personal growth and satisfaction while respecting extension of their interest, personality, abilities and the loyalty to the institute.

Training and Career Development

Career development and training remain as two related processes, in which career development is considered as a process where employee strategically explore and

create their positions over a proper planning. This increases the capacity of the employees to contribute to the mission of the organization, while organization should continually find ways to invest in the growth and development of its employees, while balancing the requirements of current work.

Trainings can be delivered as planned, organized experiences that contribute to the gaining or expansion of key competencies. Individuals can be led to take on new or expanded roles, supporting better succession through a well aligned and planned training process. A sequential process of planning, career development could be effectively used to result a more productive work force. Different types of predesigned training scenarios could be used in the staff development process to make the employees more engaged in work and among each other.

Technical or Technology Training

The knowledge on performing the technical duties efficiently and accurately could be enhanced through well-designed technical training components, while respecting diversity in job profiles. Computer operations, multimedia handling like information seeking and analysis, should be given in general along with specific technical knowledge on tools, equipment and machinery handling for those who are related to technical grade employments within the system.

Technical training could be easily provided in-situ with the experienced staff and IT units of the organizations.

Yet, it could also be administered externally, in order to maintain specific training qualities on special technical aspects.

Quality Training

Quality training that refers to being familiar with the means of preventing, detecting, and eliminating non-quality products or processes is extremely important for non-academic staff members. Since, higher education institutes are positioned under the service sector, this training could be more focused to provide a quality service through minimizing errors and delays during operational processes. For example, maintaining proper, well-ordered and clear documentations is one such factor that enhance the quality of work.

Soft Skills Training

Soft skills are referred to as, attributes that make someone to interact harmoniously and effectively with other people, such as personality traits, social graces and personal habits, which characterize the relationships with other people.

Soft skills might include strong listening, communication abilities such as, how to welcome people, e-mail etiquettes, phone etiquettes, how to deal with senior staff members within the university system, how to deal with students with their respective needs. It could also include trainings on ethics and rapport like skills as well.

Team Training

The aim of team training is to develop interconnection among the colleagues of the working environment to empower them in improving decision making, problem solving, and to provide team-development skills to attain work place efficiency. In addition, improving better communication, recognizing, categorizing and utilizing the strengths of team members, promotion of effective collaboration with colleagues and improving productivity, may also act as reasons for team training. Team training can be administered either in-house or externally. Most importantly with the use of technology, team training no longer requires people to even be in the same room.

Professional Training along with Legal knowledge

In order to exploit the quality of the career, it is essential to have professional training as an ongoing process. Professional training includes a wide variety of specialized trainings along with formal education to make someone professional in each field relevant to duties of a certain profession, which enhance their knowledge base with latest knowledge in the own professional field.

For example, it is better to have a clear idea and up to date knowledge about the university policies, regulations and university by-laws, along with clear job descriptions and job roles to perform efficiently. Professional training could be easily provided internally through peer knowledge sharing sessions. For instance,

people from the financial department can explain the process of standard procedures for cash handling under the university regulation or it can be done externally by out sourcing, but with specific professionals having expert knowledge.

Managerial Training

This should aim to improve individual skills of a non-academic employee as a leader and a manager to perform tasks and routines in the organization effectively. This type of training should focus on empathy, progressive relationship and style to engage with parallel employee categories in the organization. The managerial training process can be accomplished, internally or externally by outsourcing professionals for certain aspects such as counselling and leadership skills.

Safety Training

Safety training is a type of training that ensures the safety and health of the employees to make them protected from injuries caused by work-related accidents. Safety training is especially important for institutes that use chemicals or other types of hazardous materials in their routine work. Safety training can also include evacuation plans, emergency action plans and fire drills.

Enhance Work Place Literacy

The idea of information literacy can be defined as the ability to recognize information needs and to identify,

evaluate and use information effectively. On the other hand, information literacy is all about the ability of the people to operate effectively in an information base.

Work place literacy may include evaluation of information, critical thinking, conceptualization of information needs, awareness of personal and professional ethics, organizing information, interacting with information professionals and making effective use of information in problem-solving, decision-making and research. These information-based processes are crucial for smooth operation of the higher education sector. Through an integration process of different training modes, this quality can be harnessed within the non-academic staff members.

Methods of Training and Development

Implementation of above-mentioned training strategies could be ensured, by using different methodologies as described below.

- **On the job training**: this relates to formal training on the job, while engaging in normal responsibilities of the position. A worker becomes experienced on his/her career over time due to modification of job behaviors at the point of training or acquisition of skills.
- **Induction/orientation**: this can be carried out for new entrants of the career to make them familiarize with the general corporate requirements like ethics, norms, values, rules and regulations.

- **Apprenticeship/probationary:** This remains as a successful method for dissemination of technical knowledge, where unskilled personnel are induced to learn or acquire required knowledge and skills under a skilled person.
- **Demonstration:** this is a process of giving instructions over examples, whereby a skilled worker performs the job or task and the unskilled person closely observes closely to understand the job.
- **Vestibule/near the job training**: this is done, while being attached to a position of the organization for the purpose of skills and technology transfer under the supervision of a skilled employee. Hence, it could be achieved through placement of an individual within another area of relevant work or organization for acquirement of practical and specialized skills.
- **Formal Training**: this is a process of pre-set objectives with a clear start and an end along with a managed direction, which could be done within or outside an organization as theoretical and practical components.
- **Simulation:** ensures employees actively engage in decision making processes by feeling that they are in the real situation. This method helps in developing a better decision-making process and ensures the provision of a better understanding on how to perform the tasks and duties efficiently.

For planning an effective training or development program, efforts must be placed on individuals and organizational appraisals to identify the training needs. After the training and development program, an evaluation must be carried out to make certain that the outcomes of the program are in line with the needs and requirements, which had been identified.

With the evaluation, alignment of the training and development program can be amended to make them more effective and efficient until the individuals tend to acquire the skills and knowledge properly. However, training is considered as a part of human development, which is a process of enlarging people's choices.

In conclusion, various scholars and commentators have recognized that staff training and development process is very crucial for an organization and its effectiveness. Training is therefore realized as vital for career development and advancement of employees in general and specific scenarios. Proper objective-oriented staff development practices improve the determination, initiative and quality of work of the employees, thus assisting them to be more committed towards achieving the goals and objectives of the organization.

This in turn reduces the work stress upon the top management staff of the organizational hierarchy, while enhancing the effectiveness among employees within the organization. However, for any organization to succeed, training and re-training of all staff through workshops, conferences and seminars should be vigorously pursued and made compulsory, to achieve a

better motivated workforce and a high performing organizational environment along with the pledge to career advancement. Moreover, opportunities to further education and undergo training, should be facilitated to strengthen skill sets of employees to receive consideration for a promotion and to advance in their career. With these consents that are common to any organization, higher education sector must also pay attention of these points, encouraging to train and develop their staff to the highest capability, in order to enhance their effectiveness, irrespective of considering the category of the employees.

Ethical Conduct of an Academic in the Context of Higher Education

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"Are you the type of person who 'tends to do the right thing'? How do you clarify what the 'right thing' is?"

As people wanted to deviate "right" out of "wrong", they come up with a key term to define a system of moral principles; "Ethics". Ethics is based on justifiable standards of right and wrong that prescribe what people ought to do, usually in terms of rights, obligations, benefits to society, fairness, or specific virtues. In place of broadly examined ethical frameworks, most people instead carry around a useful set of day-to-day 'rules of thumb' that influence and govern their behavior; commonly, these include rules such as 'it is wrong to steal', it is right to help people in need', and so on.

But sometimes the failures and complexities of life mean that these simple rules are sometimes put to the test. In an academic perspective, consider the idea that it is wrong to do plagiarism. Does this mean that we cannot refer any academic research? Is it wrong to incorporate some ideas or results of other researchers? Is it enough if the source is explicitly cited?

How did you arrive at your decision? Did you take the decision based explicitly on ideas of what was right and wrong? What are the underlying principles or rules which you used to reach your decision? Some of such underlying principles or rules might include:

"I should have a commitment for my career in the long run."
"It is OK to tell a lie if it prevents someone from being hurt by the truth."
"I should always help someone in difficulty."

Ethical or Unethical

With the general perception of right and wrong to these questions, straightforward answers are not always forthcoming. These questions need to be examined in more detail; and we need theoretical frameworks that can help to analyze complex problems and to find rational, coherent solutions to those problems.

Even the meaning of "ethics" is hard to pin down and the views many people have about ethics are shaky, we can determine the difference between something being ethical or unethical based on following facts.

- Consensus of wrong: How much agreement on an action to be wrong?
- Greatness of harm: How many people will get hurt?
- Concentration of effect: How concentrated the effect of the action on victim?
- Proximity of victims: How close are the potential victims?

- Immediacy of consequences: How closely in time affect behavior?
- Probability of harm: How likely is that this action will cause harm?

Sources of Ethical Norms

By observing the society, some facts can be derived which affect the ethical norms.

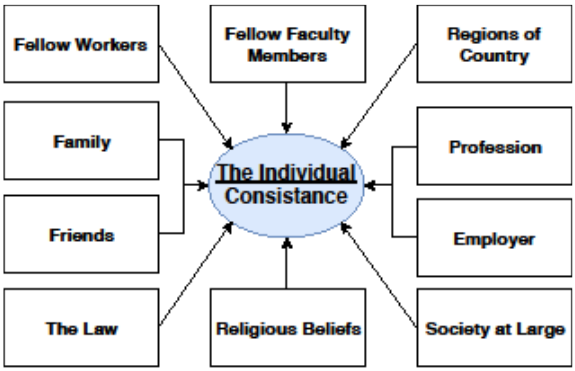

Figure 2: Sources of Ethical Norms

As a result of some recent research on the ethical conduct, it has been identified that people have different perceptions on the word "ethics". Some of them are as follows:

"Ethics has to do with how I feel about right or wrong."
"Ethics are my religious beliefs."
"Being ethical is obeying the law."
"Ethics are the standards of behavior our society accepts."
"I don't know what the word means."

As in above, many people tend to equate ethics with their feelings. But a person who sensitive to his or her feelings may deviate from doing what is right or being ethical. Most religions, of course, advocate high ethical standards. However, ethics cannot be confined to religion nor is it the same as religion.

The law unites ethical standards to which most citizens subscribe. But laws, like feelings, can diverge from what is ethical. Pre-Civil War and slavery laws are grotesquely obvious examples of laws that deviate from what is ethical.

Moreover, being ethical is not the same as doing "whatever society accepts." Standards of behavior in society can deviate from what is ethical. An entire society can become ethically corrupt as in Nazi Germany.

What, then, is ethics? Ethics are two things. First, ethics refers to well-founded standards of right and wrong. Ethics, for example, refers to those standards that impose reasonable obligations to refrain from rape, stealing, murder, assault, slander, and fraud.

Secondly, ethics point out the study and development of one's ethical standards. As mentioned above, feelings, laws, and social norms can diverge from what is ethical. So, it is necessary to regularly examine one's standards to ensure that they are reasonable and well-founded.

Ethics and Morality

The ordinary meanings of terms 'ethics' and 'morality' do not always correspond with philosophers' use of the terms. Ethics is often used in connection with the activities of organizations and with professional codes of conduct: for instance, academic ethics, which are often formalized in terms of exhaustive sets of rules or guidelines stating how academics are expected to behave in the academic enterprise (such as students shall behave conscientiously, taking and giving credit where credit is due, avoiding an impropriety, and when in doubt, consulting the instructor or other knowledgeable persons as to whether particular conduct, collaboration, and/or acknowledgment of sources is appropriate.).

Morality is more often used in connection with the ways in which individuals conduct their personal, private lives, often in relation to personal financial probity, lawful conduct and acceptable standards of interpersonal behavior.

Lawrence Kohlberg's Stages of Moral Development

The theory holds that moral reasoning, the basis for ethical behavior, has six stages of development, each more adequate at responding to moral dilemmas than its predecessor. The six stages of moral development are grouped into three levels of morality as; pre-conventional, conventional, and post-conventional morality.

Table 1: Lawrence Kohlberg's stages of moral development

Level	Level 1 (Pre-Conventional)	Obedience and punishment orientation (How can I avoid punishment?)
		Self-interest orientation (What's in it for me?)
	Level 2 (Conventional)	Interpersonal accord and conformity (Social norms) (The good boy/girl attitude)
		Authority and social-order maintaining orientation (Law and order morality)
	Level 3 (Post-Conventional)	Social contract orientation
		Universal ethical principles (Principled conscience)

Maintain Ethical Standards

Most ethical decisions have no clear-cut or obvious decision that can be determined solely through quantitative analysis or consideration of objective data or information. Sometimes ethical decisions are not choosing between good and bad, but between good and better or between bad and worse. Ethical decision making also involves choice about who should be involved in the process and how the decision should be made.

However, as far as the values of ethics are concerned it's clear that the ethical standards are needed to be maintained. Among several ways, followings are concerned to be the best methods of maintaining high ethical standards.

- Provide Ethics Training
- Recognition for Whistleblowers
- Identifying the Ethical role models
- Maintaining Codes of Ethics

Provide Ethics Training

Organizations with high ethical standards use compliance and ethics programs to clarify and communicate their ethical standards to employees and help to develop the skill of 'ethical decision making'. Throughout such programs, employees can identify the boundaries of legal and ethical behavior which can collaborate to success the personal and organizational behaviors.

Ethics training inside corporations is aimed at helping employees address the moral dimension of taking decisions. Training for ethical decision making can include;

- Workshops
- Guest lectures
- Discussions (manager/employee)

General ethics training focuses on clarifying and communicating an organization's ethical code to employees. In the meantime, some training also focuses

on how to act when ethics are involved in a decision. Discussions of scenarios and exercises on role-playing simulate real decision-making situations. And, some ethics training will also cover the resources available to help employees when they face an ethical dilemma or an ethical breach.

Recognition for Whistleblowers

A whistle-blower is a person who tells the public or an authorized person about an unethical behavior occurring in a government department, private company, or organization. The unethical behavior can be a violation of a law, rule, or regulation, or a direct threat to public interest, such as fraud, health and safety violations, or corruption.

Identifying the Ethical Role Models

Since managers/ administrative act a huge role in upholding ethical standards, they need to play a role model in their own actions and decisions. In addition to following the organization's code of ethics, managers may be obligated to follow a separate professional ethical code, depending on their role, responsibilities, and training.

Also authorizes people need to identify the employees who follow the code of ethics and behave well in the organizational expectation's context. These identified employees should be well recognized and appreciated in front of all others and so that they also will tend to follow this area of ethical conduct.

Codes of Ethics

The line between right and wrong become very thin as in some specific ethical situations. Considering this, many organizations define a system of principles, rules or regulations to assist members in understanding the difference between right and wrong and how to apply it to their decisions. As an organization defines codes of ethics, there are some facts that need to consider such as organization's beliefs, vision and mission, privacy, quality, and the environment. These codes should not only determine whether a violation of the code of ethics has occurred but also should impose the remedies should be taken as well. There are three types of ethical codes:

i. **Codes of Business Ethics**
   A code of business ethics may set out general principles based on organization's beliefs on matters such as mission, quality, privacy, and the environment.

ii. **Codes of Conduct for Employees**
   A code of conduct for employees sets out the procedures to be used in specific ethical situations, such as conflicts of interest or the acceptance of gifts. It may include specific lists of dos and don'ts.

iii. **Codes of Professional Practice**
   A code of practice is adopted to regulate a profession. It may be styled as a code of professional responsibility that covers common scenarios and decisions and provides a guide to

what behavior is considered ethical, correct, or right in certain circumstances.

Who is an Academic?

Cambridge Dictionary Definition:
"Someone who teaches at a college, or who studies as part of their job."

English Oxford Living Dictionary Definition:
"A teacher or scholar in a university or other institute of higher education."

Collins Dictionary Definition:
"An academic is a member of a university or college who teaches or does research."

An academic may play several roles in his/her career pathway such as a teacher, consultant, mentor, researcher, administrator, and employee. They must act or follow different ethical standards in different roles. Academic ethics encompasses many issues and help to maintain the culture of honesty in all aspects of teaching and research.

Members of the University community must act honestly and respect other people's work and the outcomes. The Universities act impose that universities arrange their education and instruction in conformity with ethical principles and good scientific practices.

Roles and Responsibilities

Role: Teacher

Typical responsibilities of the role of a teacher in higher education (HE) include; interviewing course applicants, lecture planning, preparation and research, contact and teaching time with students, checking and assessing students' work, encouraging personal development via tutorial, workshops or pastoral work, assisting students in putting plans into action etc.

It is not legal but an ethical requirement for HE teachers to gain formal teaching qualifications via a relevant training program. Nowadays many government universities encourage their new recruits to go through a staff development program in order to fill the gaps in their ethical and moral conduct.

According to the Quality Assurance Council (QAC) of University Grants Commission, Sri Lanka (UGC) following are some ethical principles of University Teaching.

Content Competence

University teachers should continuously improve and maintain an up-to-date high level of their subject knowledge. They should ensure that the course content is current, accurate, relevant and appropriate to the level of the study program and that it covers the minimum requirement defined in the syllabus for each subject.

Pedagogical Competence

Pedagogical skills of a university teacher can be improved through the development of their teaching methodology. Course objectives should be communicated to the students at the beginning of the course and have them aligned to the objectives of the degree program. Lecturers should select the methods of instruction based on research evidence and ensure that such methods of instruction are effective in helping students to achieve the course objectives and Intended Learning Outcomes of the course.

Dealing with Sensitive Topics

In dealing with such topics, teachers should first explain why such topics have been included in the course and then discuss them in an open, honest, and positive manner.

Student Development

Since this is the primary objective of teaching, teachers should design their methods of instruction to facilitate learning, encourage autonomy and independent thinking in students. Also, students should be treated with respect and dignity as well.

Dual Relationships with Students

University teachers' relationships with students should be based on pedagogical goals and academic requirements. Teachers should not enter dual-role

relationships with students that could lead to actual or perceived favoritism.

Confidentiality

University teachers should ensure that student grades, attendance records, and private communications are treated as confidential material. Thus, they should be released only for legitimate academic purposes or only with student's consent. A release of such information should be beneficial to the student or should prevent harm to others.

Valid Assessment of students

Since the student performance at Universities is greatly determined by the assessment policies and strategies of degree programs, it is imperative that teachers select assessment techniques that are consistent with the objectives of the course. They should at the same time be reliable and valid as much as possible.

Role: Consultant/Mentor

A consultant (from Latin: consult is "to discuss") is a professional who provides professional or expert advice in a area. With the trending situations of the university environment, consulting or mentoring has high demand. Moreover, there is no way academics can ignore this responsibility, and there is no list of moral principles that can cover all situations in a foolproof way.

Some typical considerations of the role of consultant/mentor are as follows;

- In talking with students, make no claims based on uncertain knowledge. Avoid hearsay.
- An adviser must be a custodian of the student's good reputation.
- Present students with all the options open to them, not just the ones you favor.
- An adviser who misadvises a student has the moral obligation to make things right.
- Acknowledge one's biases and respond to students as unique individuals and not as members of a group or category.
- Advisers advise; students decide.

Legal /Moral Responsibilities of a Mentor

As an academic adviser, you became part of a larger legal entity: It is considered that the academic adviser is the University, and actions taken by him/her are the University's actions. So that we need to have a clear understanding of what we ought to do and our boundaries.

Academic consultants must be very careful as making any claims that you can't back up, such as regards fulfillment of degree requirements, guaranteeing employment in a certain field, and so on. Even verbal statements, whether true or not, are potentially dangerous because their utterance changes the terms of the contract between the student and the University.

In the role of consultancy defamation is a very common and dangerous issue. "Defamation is a false statement made by one person to another about a third person that damages the reputation of the third person". Talk about our students with each other is good in the context of taking other's opinion. But amplifying problems to make the narrative more interesting is not.

Some obvious ways to fulfill moral obligations are to present students with each option, not just those you want them to follow; to get your students to take responsibility in advising and curricular matters; and not to cast aspersions on a colleague, class, or student.

Bias and Harassment Behavior of a Mentor

Bias and harassment are not limited to harassment along any of the following lines: gender, race, culture, age, sexual orientation, disability, and intellectual abilities. We humans are forced to make judgments about them according to our own lights. This point of view means that we are biased by our very nature. But in the role of mentoring, we must strive to fight against our natures and respond to people as individuals. A good way to become aware of your own biases is to monitor closely how you refer to students in the third person when discussing cases with other advisers.

Conflict of Interest of an Academic Adviser

It is possible that your role as a private individual comes into conflict with your role as an adviser. For example, your legal versus your moral obligations; or

your role as student advocate versus your role as institutional representative. Sometimes what the student wants conflicts very much with what you want for them. But there is no rule for dealing with conflict of interest; you, yourself, must decide which role should gain precedence.

As you face such a conflict scenario, the only thing to do is to withdraw from the situation. Direct the student to a higher authority or ask another adviser to take over the situation for you.

Role: Researcher

All University teachers are expected to conduct research in their fields of interest. Ethical issues related to funding and conflicts of interest, sometimes, could arise in conducting research. Further, ethical issues could arise in the conduct of human and animal research, genetic research as well as in ethnic, religious and gender studies. The following are situations where ethics need to be considered in research undertaken by University teachers.

Identification and Justification of Research Problems

After an extensive literature review, the proponents of research should be able to highlight the gaps in current knowledge and how the intended study would bridge the due reference should be made to all relevant publications. Suppression or non-reporting of literature unfavorable to one's own proposed research is unethical.

Conflicts of Interest/Funding

At all times researchers should maintain transparency. The actual outcome of the project should be stated clearly. Self-interests including financial benefits, one's own firm beliefs and other gains in kind should be avoided.

Utilization of Funds, Resources and Methodology

Use of methods that are unlikely to achieve the objectives is not only unscientific but also unethical as valuable resources in the form of time, effort and funds are wasted. Hence, appropriate methodology for the achievement of the objectives should be selected and funds allocated.

Ethical Issues in Social and Biological Research

In biological research as well as research on humanities and social studies where information of an intimate nature is sought, certain guidelines must be followed. These guidelines may be institutional, departmental, national and international in nature. Some ethical issues also have legal and human (and animal) rights implications.

Reporting of Results

All relevant results must be reported. Suppression or non-reporting of unfavorable results is unethical. Likewise, the non-mentioning of the limitations of the methodology is considered unethical.

Duplicate Publications

The outcome of research as an article should be published only once. However, duplicate publications occur in different forms such as publishing in another source under a different title, fragmented and published as several separate papers and extending an already published paper by adding data. These publications are unethical and should be avoided.

Authorship

This is an important ethical issue in scientific publications. Authorship of a publication should be restricted to those who had been directly involved in the study. These involvements include conceptualization, design, collection and management of data, discussion and writing of the paper.

Research Fraud

Intentional dishonesty in research is unethical. These would include fabrication or invention of data, falsification or deliberate distortion of data and plagiarism. Copying considerable amounts of material without acknowledgement could also be included in research fraud.

Other than the above ethical principles in research, there are some other general facts that need to be followed as well.

- Writing research proposals, papers and other publications

- Reading academic journals
- Supervising PhD students and research staff
- Managing research budgets
- Attending and speaking at conferences and seminars

Role: Administrator and Employee

General considerations in the field of administrative and employee role are;

- invigilating examinations
- attending staff meetings
- general administration
- managing programs and existing projects
- not to misuse academic freedom
- stand for justice
- personality: traits, attitudes, perception
- reliability: serve justice, being ethical
- integrity: impartial, not to be prejudice, no manipulations
- credibility: trustworthy, punctual, honesty, defend own convictions
- ability to identify and recognize value systems according to professional ethics
- commitment to stick to the high standards of professional ethics
- willingness to share ethical values with others
- being effective to handle ethical dilemmas
- zero tolerance on unethical deeds

Respect for Colleagues:

Teachers should respect the dignity of their colleagues and work cooperatively with them in the interest of student development. Thus, teachers should maintain professionalism in order to maximize student acquirement of degree objectives.

Respect for the Institution:

University teachers should be aware of and respect the educational goals, policies and standards of the University. They should always share a collective responsibility to work for the good of the University.

Academic Freedom and Accountability:

It is recognized that University teachers should have 'Academic Freedom' to teach and carry out research without any interference; be open and flexible in their academic activities; and undertake activities outside their employment that enhance their intellect and professional skills, without abandoning their primary commitments to the University.

Performance of an academic should not only include teaching and research work, but also those contributing to University and National Development. It should also be noted that some of these activities are performed outside the regular working hours of the University.

Framework and Importance of Code of Ethics for Higher Educational Institutes

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Code of Ethics; Code of Conduct & Code of Practice

Code of Ethics is a value statement, which works like the structure of general principles to guide behavior; outlining a set of principles that affect management.

The International Federation of Accountants provided the following definition for the code of conduct; "Principles, values, standards, or rules of behavior that guide the decisions, procedures and systems of an organization in a way that contributes to the welfare of its key stakeholders and respects the rights of all constituents affected by its operations." A Code of Conduct applies the Code of Ethics to a host of relevant situations. A particular rule in the Code of Ethics might state that; all employees will obey the law; a Code of Conduct might list several specific laws relevant to different areas of organizational operations, or industry, that employees need to obey.

Code of Practice applications are more rigorous, whereby guidelines are made mandate. Thus, people

who wish to comply with the Code of Practice must follow exactly what is set down within the code, in order to comply with and be covered by it. Therefore, when industry, associations or companies develop a Code of Practice, more substance and the exact following is mandated. Introduction of a code of practice for conventionally professional job roles in the Universities such as; laboratory technicians, workshop staffs etc. is of higher importance.

Current Practice in Sri Lanka

In the modern society, people need to follow a more informative code of ethics for institutional activities, whereas attitudes and beliefs of the people have evolved. It is believed that human ethical conduct is not genetically but behaviorally acquired through learning and education. They may be rooted in one's mind through family upbringing, religious background, school education, the inspirational conduct of teachers at schools/universities, the guidance of mentors and with the conduct of other superiors at workplaces and ethical standards enshrined and upheld by professional bodies.

Once established, human beings tend to learn and maintain ethical standards and appreciate moral conduct in the day to day life; which may be a slow, incremental and sometimes a grudging process. There are many, who seek to resist the principles of ethical conduct either on account of ignorance or deception. The first category (who doesn't know) can be corrected easily,

while the second category (who don't want to know) is incorrigible, unfortunately.

The ethics and norms students have followed in schools, villages, and house naturally become norms even at the university. Some professional bodies like Institute of Engineers Sri Lanka and Institute of Chartered Accountants of Sri Lanka follow the code of conduct while practicing their profession in Sri Lanka.

Therefore, departments accredited such professionals naturally follow the same code of conduct. "University Student Charter" published by University Grant Commission in the year 2012 was written a comprehensive guide to the university community but it lacks certain parts from the code of ethics required for the university community. However, the vision and mission of state universities stated clearly with the guiding principles on which state universities are governed, which are Openness, Equity and Diversity and Commitment to uphold democratic rights and social norms.

In most of the foreign universities, the Code of Ethics is often published in their website, making it accessible to the public, unfortunately, none of the Sri Lankan universities haven't made them available. As institutions dedicated to the search of truth through teaching, scholarship, and research, universities need to maintain the trust and confidence of both the university community and the public. They consider the University's reputation is one of its most valuable assets and the Code of Ethics helps to maintain that.

Adopting the Code

University Grant Commission needs to issue a circular to all universities to encourage them to prepare the Code of Ethics for themselves. It is better to adopt the code formally. Further it is better to ask academic, academic supporting staff and students to sign a copy of the code when accepting a position.

How to Introduce an Ethical Code to Universities?

As emphasized in the "Developing a Code of Conduct: A step by step guide" (white paper) the specific content of a Code of Conduct will vary depending on factors such as the nature of the organization and the type industry in which it conducts business, a standard ethical code consists several basic elements as listed below, which will be used to develop the model Code of Ethics since format is acceptable for both codes:

- Engaging title – avoid generic-sounding titles, which can make the code sound overly formal, much like a legal document.
- Introductory letter from the Vice-Chancellor or leader detailing the purpose of the code and its importance in creating an ethical culture that benefits employees and stakeholders.
- Table of contents
- Introduction expands upon the purposes and benefits outlined in the introductory letter
- The organization's mission statement and/or statement of key values

- Definition of the code's scope – to whom it applies, when it applies and how it applies
- Listing of code provisions these are the substantive issues that impact the organization
- Examples of appropriate behavior as it relates to each code provision
- A framework providing employees with guidance for making decisions and taking appropriate actions when faced with an ethical dilemma

The code should be used as a reference for day to day business related to ethics within the organization. The Code of Ethics development cycle sketched in the Figure 1.

Target of the Code

This targets the university community including permanent staff with academic and academic supporting staff, visiting lecturers, contractual staff, internal and external students.

The Purpose

According to (Huntington, 2017) proper definition and communication of the purpose of having an ethical code for higher educational institutes of Sri Lanka to the community are important to eliminate misunderstandings among the community initially. All members of the university community are responsible for sustaining the high ethical standards of an institution, and the broader community in which university function. The University values inspiration,

ambition, independence and commitment integrity, diversity, respect, freedom of inquiry and expression, trust, honesty and fairness and strives to integrate these values into its education, research, healthcare, and business practices.

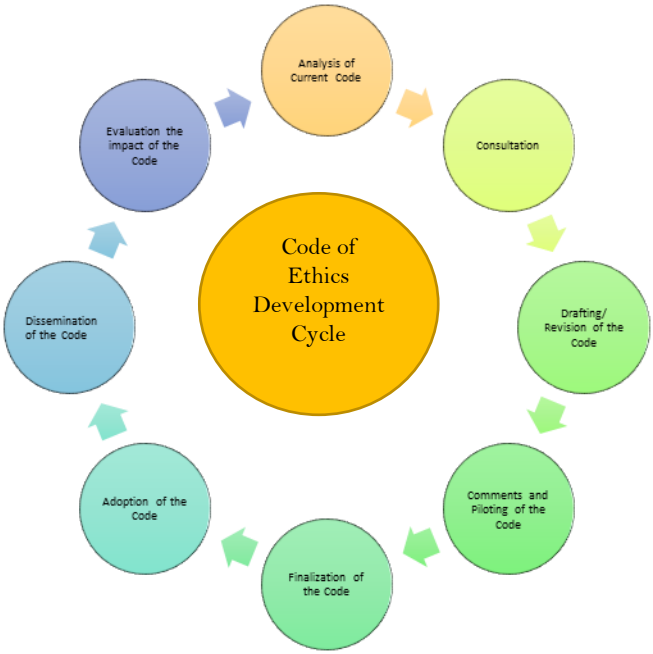

Figure 1: Steps of Code of Ethics Development
Source: Poisson (2014)

Statement of Core Values of Universities

Inspiration, independence, ambition and commitment must be the core values that define both the conduct and attitudes of the students and employees of Universities.

Inspiration

University staff and students are motivated and inspired in their activities such as, studies and research. The whole university community members also are an inspiration to each other. Academics including lecturers and researchers act as role models for their students as well as for each other. Students set an example to their fellow students, especially the senior community. Being passionate and inspired, ensures that staff and students are curious and eager to learn, they are critical and investigative and open to new ideas, opinions and perspectives.

Ambition

University staff and students need to be very demanding for themselves and must appreciate a critical dialogue about the ambitions they have set for themselves. Various academic programs and research groups seek to reach the top. Academic support and administrative staff strive to continuously develop their professionalism to optimally facilitate the primary processes of teaching and research at universities. Initiative and entrepreneurship remain as highly valued concepts among staff and students. Extraordinary performances in every group gain attention and recognition among the university community.

Independence

Universities must create enough chance for staff and students to encourage their talents. Independent

thought must be an essential feature of university academic community. The high level of independence places significant demands on the fair and responsible conduct of staff and students: they are expected to be motivated, thorough, trustworthy and ethically responsible. Integrity also needs an open and respectful teamwork between staff and students.

Elements of Code for Staff

Everyone's Input is recognized

Academic and academic support staff alike appreciate each other's activities. They treat one another in a respectful and honest way and aspire to maintain clear and open communication. They are ready to help each other and work towards a healthy team spirit.

Model Behavior

University supervisors act as role models to others and set clear objectives, encourage their staff to do well, provide team spirit and cooperativeness, and call to account any colleague whose behavior is unacceptable. Supervisors are open to constructive criticism and suggestions made by other staff members. The annual Assessment & Development interviews lay the foundation for a clear understanding between supervisor and staff.

Quality and Enthusiasm

Lecturers must work hard to guarantee a high level of teaching and educational quality and sound supervision of students. They continuously develop their skills and keep working towards development, which allows them to provide high-quality teaching in several forms that motivate students. Lecturers make sure that the assignments and exams are appropriate to achieve the objectives of the course and see to it that these are carefully assessed. They are aware of the larger context of that their courses are supportive elements.

A fair assessment requires the lecturer to prevent any student from taking credit for a fellow student's achievement. University lecturers must obey the agreements made and the lecture hours set, they are open to positive criticism, and make sure their students can easily contact them, both in person during and after lectures and via e-mail.

Professionalism

Integrity, conscientiousness and expertise are the foundations of the professionalism of academic staff, about both research and teaching and their cooperation with colleagues. They attempt to make excellent and innovative contributions to their fields of expertise and to bring these to the attention of their colleagues in the field and – where relevant – to the wider public.

Environmental Health & Safety, Including Workplace Health and Safety

Members of the University Community must be committed to protecting the health and safety of its members by providing safe workplaces. The University will provide information and training about health and safety hazards, and safeguards. University Community members must adhere to good health and safety practices and comply with all environmental health and safety laws and regulations. Detailed guide for environmental health &safety, including workplace health and safety is included in "Stanford Health and Safety Training Policies" that can be adopted to Sri Lankan context.

Auxiliary Activities

Members of staff, who carry out auxiliary activities in addition to their usual university tasks, make sure that these activities do not conflict with and are not detrimental to their main task. They need to keep their business and personal interests clearly separate and refrain from activities that may harm the interests or reputation of the

Financial Responsibilities and Internal Controls

Members of the University Community are expected to employ sound business practices and exercise prudent financial management in their stewardship of University resources.

Use of University Resources

The university resources must be reserved for business purposes on behalf of the University. They may not be used for personal gain and may not be used for personal use except in a manner that is incidental, and reasonable considering the employee's duties. In the "University Student Charter" published by UGC Sri Lanka, although above code is stated it only focused the student but not the staff of the university.

Response to Governmental or Other Investigations

University is committed towards, cooperating with government investigators as required by law. If an employee receives an order, search warrant or other similar document, before taking any action, the employee must immediately contact the immediate supervisor or the Department head or the Dean of the Faculty. Any officer appointed by the Vice Chancellor is responsible for authorizing the release or copying of any University records or documents.

Confidentiality and Privacy

Since university staff handle confidential and sensitive data of the members in the university community, no unauthorized use or disclosure of such information is allowed either during the community member's association with the University or after the association with the University ends. This ethic is essential to include in the Sri Lankan Code of Ethics for universities.

Elements of Code for Students

Students at Sri Lankan universities need to prepare themselves for careers and responsible positions in society. This requires intellectual curiosity, active participation in the study program and extracurricular activities, and the effort necessary to achieve good grades.

Ambition

Students at universities wish to perform to the best of their abilities. They choose their own programs to suit their talents and ambitions and they make sure that they are aware of the course requirements. As they are training to become academics, students learn to work independently, to communicate effectively, to gather information meticulously, and to solve problems. When preparing for their exams, assignments or tests, students work very conscientiously. When working in groups, they are cooperative and do not take credit for the achievements of their fellows. If they see others doing this, they need to raise the matter.

Commitment

Students must actively participate during lectures. They stimulate each other and their lecturers with critical questions and well-substantiated discussions, which requires sound preparation. In addition to their studies, students show great importance to being active in student organizations and student committees as

another way of being trained academically and learning to work with others.

Respect

Respecting each other is a key concept in the contacts between staff and student and the statement for staff directly apply to students.

Conscientiousness

Students must be very conscientious, when making use of the University's resources such as equipment, the computer network, the library, lecture halls, and any other communal facilities.

Reporting to Management

It is not necessary to report any incident that violates Code of ethics if it does not violate Code of Conduct or by laws of the University because Code of Ethics is a value statement about the University Community.

Drafting of the model Ethical Code will be highly useful for university policymakers. However, the values of a University and codes for relevant parties of the University community must be carefully selected by an expert panel as mentioned in the section "Consultation for the Code development" at the time of official Code of Ethics development.

Ethics in Academic Research

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Introduction

All University teachers are expected to conduct research in their fields of specialization. Ethical conduct is a compulsory component in academic research activities. The academic institutions around the world encourage researchers to follow the code of ethics specified by institutions to maintain high standards of integrity and accountability in their conduct in academic research. Some organizations use the term "code of good practice in research" for the same.

As academia is largely a self-regulated community, a code of ethics provides academic researchers with the support they need to safeguard high standards of behavior and to make explicit those norms that allow individuals to operate independently. Ethical norms are so ubiquitous that one might be tempted to consider them as simple common sense. Therefore, all researchers and academics are obliged to respect these world-accepted ethical principles irrespective of not having a well-documented code of ethics at the institutional level.

This study aims to review the code of ethics of some of the world's most recognized institutions including, European University Institute[1], University of Exeter, University of Oxford and University of Westminster.

Ethics related to research that involve humans, animals as well as in ethnic, religious and gender studies need to be considered in the context of the legislations/ constitutions of different countries and are not considered in detail in this study. This article provides a summary of widely accepted ethical principles in research and highlights the possible interventions to minimize ethical misconduct for a higher standard of integrity and accountability in academic research.

1. Ethics in Research and Its Important

Ethics are defined as moral principles that govern a person's behavior or the conducting of an activity. Most commonly it is understood as morals that distinguish between acceptable and unacceptable behavior. There are several reasons why it is important to adhere to ethical norms in research.

- Ethical conduct promotes truth and avoids passing false information to the scientific or general community. For example,

[1] European University Institute (2017). Code of Ethics in Academic Research. Retrieved on 17 Sep. 2018 <https://www.eui.eu/Documents/ServicesAdmin/DeanOfStudies/CodeofEthicsinAcademicResearch.pdf>

prohibits fabricating, falsifying, or misrepresenting research data to endorse the truth and minimize errors.

- Ethical standards also promote the values that are essential for collaborative work, such as trust, accountability, mutual respect, and fairness which are critical in researches which involve a great deal of cooperation and coordination among many different people and institutions.

- Many of the ethical norms ensure that researchers can be held accountable to the public. This will also ensure responsible communication of findings from research. These codes address issues such as honesty, objectivity, respect for intellectual property, social responsibility, confidentiality, non-discrimination and many others.

- Ethical norms in research also help to build the trust of the public as well as funding organizations on research community. Funding agencies are more likely to fund a research project if they can trust the quality and integrity of research.

- Ethical norms promote the aims of research, such as the building up of knowledge, and avoidance of errors which prohibits fabricating, falsifying, or misrepresenting research data.

2. Ethical Principles in Academic Research

There are widely accepted ethical principles in research and published by various organizations, scientific journals and publishers throughout the world. The Quality Assurance Council of the University Grants Commission (UGC) Sri Lanka has also provided the university teachers with a guideline on "Ethics and Academic Accountability for Academic Staff in the Sri Lankan University System" which includes some of the good practices explained in this section. Described below is a summary of some ethical principles established in the world's most recognized Universities and Institutions.

Honesty and Integrity

Honesty is the foundation of good academic work in all scientific communications. Honesty is a precondition in reporting data, results and procedures, and publication. Intentional dishonesty in research is considered as unethical. These would include fabrication or invention of data, falsification or deliberate distortion and plagiarism; copying considerable amounts of material without acknowledgement.

Objectivity

Objectivity required to avoid bias in experimental activities of designing, data analyzing, peer reviewing, and other aspects of research. It is obligatory to disclose personal or financial interests that may associated with the research activity.

Responsible Authorship and Allocation of Due Credit

This principle provides guidance on the authorship of a publication which restrict to those who had been directly associated with the project study. These involvements include conceptualization, design, collection and management of data, discussion and writing of the paper.

Good Stewardship of Public Resources Used to Conduct Research

This includes managing resources in the most cost-effective manner and being responsible of all expenses with an accountability.

Carefulness

Carefulness is to avoid careless errors and mistakes. A Researcher should carefully and critically examine one's own work, which keeps good records of research activities, such as data collection and research design to trace for any correction during review.

Respect for Intellectual Property

This principle honors patents, copyrights, and other forms of intellectual properties. In addition, this highlights not to use unpublished data, methods, or results without permission and giving proper acknowledgement or credit for all contributions to research.

Confidentiality

Confidentiality means protecting confidential communications, personnel records, trade or military secrets, and patient records. This may also include respecting any non-disclosure agreements consented.

Reporting of Results

Ethical reporting considers reporting all relevant results related to the research. Suppression or non-reporting of unfavorable results is considered unethical. This includes trimming outliers from a data set without discussing reasons in the paper. Furthermore, reporting results without mentioning the limitations of the methodology is deemed unethical.

Responsible Publication

This principle highlights publishing in order to advance research and scholarship, not to advance just someone's own career. This also includes avoiding wasteful and duplicative publication. Here, the actual outcome of the project should be stated clearly. Quoting studies that only support the study outcome and failure to include negative results should also be avoided.

Non-Discrimination

This considers avoiding discrimination against anyone based on sex, race, ethnicity, or other factors not related to scientific competence and integrity.

Legality

Being aware of relevant laws, institutional and governmental policies is important in this aspect. Because ignorance is not considered as an excuse for being unethical or violation of the law.

Ethical Use of Research Funds

This principle indicates avoiding the use of research funds for personal or other unintended uses. Here, following the rules of the donor agency and reporting with honesty is considered important. It also respects observing the terms and conditions of institutionally accepted procedures where applicable.

Competence

Competence includes maintaining and improving one's own professional competence and expertise through lifelong education and learning. Researchers should recognize the boundaries of their competence and the limitations of their expertise. In doing so, researchers should engage in only those research practices and techniques for which they are qualified by education, training and or experience.

3. Misconduct in Academic Research

Deliberate or negligent deviations from accepted practice in proposing, carrying out or reporting results of research is considered as a research misconduct. Misconduct also includes any plan or attempt for

deviation from accepted practices. Misconduct can be of two main categories: Research misconduct and misuse of research funds. There are different types of misuses under each category.

- **Research Misconduct**

Fabrication

This means creation or construction of data or findings without conducting an actual experiment. He/she fabricates data and present it as if it were the outcome of an experiment and consequently there is no record for replication of the research or true evidences on the conducted research.

Falsification

Falsification includes changing or omitting data/results in such a way that the research is not accurately represented. In addition, altering reports of research in order to falsify data or outcomes from research activities is also considered as falsification. This also includes, changing the true outcome of an experiment, may be when it is unsuccessful, or the outcome is unsatisfactory. A person might falsify data to make it fit with the desired result of a study.

Plagiarism

This encompasses deliberate copying of ideas, text, data or other work (or any combination thereof) without due permission or acknowledgement.

Extensive paraphrasing or quoting without proper citation of the source or lifting directly from a text or other academic source without referencing are considered as major violations. Researchers should always place their work in the context of the advancement of the field and acknowledge the findings of others on which they have built their research.

Piracy

This includes deliberate exploitation of ideas from others without a proper acknowledgement.

Abuse of Intellectual Property Rights

This is about failure to observe legal norms regarding copyright and the moral rights of authors which can have serious consequences.

- **Misuse of Research Funds**

Falsified Transaction /Vender deposits

This may include asking the University/ Institution to pay for a falsified transaction. This may be done by asking a vender to issue a false invoice and requesting payment from the Institute.

Fraudulent Business Trips

This means requesting the Institute/University to pay for a falsified research related trip. This may include situations of the period of the trip became shorter than

scheduled but the researcher does not report a change of trip and obtain accommodation fees and daily allowance as scheduled and does not return the unused balance.

Fraudulent Remuneration

Requesting payments for falsified work. This may include similar situations to create false attendance records to request the institute to pay labor costs, and then diverting the money to him/herself to use for some other purpose.

4. Preventive Measures against Research Misconduct

Individual researchers or research teams as well as institutions which includes universities, research institutes and funding agencies should take the responsibility of preventing research misconduct of all magnitudes. Some institutions have set of rules for preventing against research misconduct and investigation procedures. Among all procedures, the most important preventive measure should be raising awareness of ethical principles, especially among new members to the world of academic research. There are some preventive measures that can be used to avoid misconduct in academic research as indicated below.

Establishment of Academic Research Ethical Review Committee

Establishing a body for planning and implementation of academic research ethics related publicity, training and

education for researchers. Providing guidance on research ethics and consequences of any misconduct. This committee may also be able to investigate on ethical misconduct and provide recommendations for resolving as authorized.

Introducing Research Ethics Training and Courses

Providing on-demand research ethics training on academic research ethics for academics and establishment of a course on research ethics to be followed by undergraduate and postgraduate students, before undertaking research will be of utmost importance. Examples for this is provided by establishing compulsory courses on Responsible Conduct of Research (RCR) for undergraduate students, graduate students and postdoctoral researchers by MIT, World's top-ranking university.

Submission of Written Oath

The researchers who participate in projects funded by some funding agencies are required to sign and submit oaths to relevant institutions. This provide the researcher with a commitment to follow certain guidelines set by the organization.

Audit of Public Research Funds

In order to determine whether the research funds are used properly in line with the objectives, continuous auditing and monitoring should be carried out. Some organizations have well-established code of practice and

procedures on research ethics and failure to comply with them may give rise to an allegation of misconduct in research. Misconduct in research may be a ground for disciplinary action, and if serious, for dismissal or expulsion.

'Skills' the Labor Market Demand from a Graduate

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We are living in a dynamic environment where everything changes very fast. Universities should be capable enough of producing graduates in a way that they would be equipped enough to survive and emerge within the evolving topography. In order to do so, as the academic community, we should come up with the innovative teaching and learning techniques contrast conventional, teacher-centered teaching.

In measuring the development of a country, one of the major measurements is the education. Education or specially the higher education should prepare the students to cope with different career opportunities in the country and or in the globe. As the major contributors, the academic community should develop their students competent enough in skills and knowledge to become future leaders.

The purpose of this article is to identify the role of universities in preparing a well-equipped graduate who could play in the dynamic job market and clamber his/her career ladder. As lecturers we would be satisfied with the teaching methodologies we use. However as responsible academic community we should ensure that

those methods are effective enough to meet the graduate attributes define in the Graduate's Profile.

According to Ariyawansa (2008)[1] even though the objective of university education is to produce a leading role from graduates for the development of the country, the Sri Lankan University Education System itself is not a job oriented one. Further, it is argued that one of the major obligations of universities is to produce capable and competent enough graduates who can actively contribute to the economy because country's development is highly rely on these fresh intellectuals.

University Education

University Education System is established to promote and develop the higher education of the country. At the end of each degree program, it should ensure that the graduates passed out from the universities are fresh intellectuals who are developed in every aspects of human life and have become a productive human being in economically and socially.

The final objective of University Education of the students is to obtain better employment opportunities at the end of their graduation. Therefore, the primary objective of the University Education also should be to prepare the student in a manner where they become

[1] Ariyawansa, R.G. 2008. Employability of Graduates of Sri Lankan Universities. *Sri Lankan Journal of Human Resource Management*, *2*(1)

competent enough in their knowledge and skills to meet their ultimate objective of getting a better employment and gain good living standards in future.

Then the question arises whether the Sri Lankan University Education System has become capable enough to produce such a productive human being to the country where all the graduates meet their expected employment. For this providing the Degree Certificate with a good class is not enough to get the job, the students him/herself should prove that he/she is equipped with that knowledge and skills which the papers represent.

Because having a Degree with a class has become a very common thing in the society and for a particular job, there are so many candidates with the equal degree qualification. Therefore, what is needing to be verified by the University Education is that, at the graduation, with the paper qualification the student has gain a very good value addition to him/her with all necessary knowledge and skills to win the competitive job market.

Therefore, the University Education System should be designed accordingly to produce such a valuable human capital which meets the job market expectations.

Employability of Graduates

As per my view, University Education should align with the industry requirement. Because after all we are releasing our products (Graduates) to the job market and these products are sold at different prices in the job

market. In order to be sold at a high price under high demand, they should be very high-quality products equipped with all the necessary requirements what the industry or the job market demand for. But what is commonly see is many of the Graduates are jobless for several years after graduation or end-up with irrelevant lower grade jobs. According to King (2003)[2] this is because of the gap existing between the skills and capabilities of the Graduates, and the requirements and demand in the dynamic job environment.

Harvey (2003)[3] has defined employability as; *"More than about developing attributes, techniques or experiences just to enable a student to get a job" and instead emphasized "developing critical, reflective abilities, with a view to empowering and enhancing the learner".*

Skills for the Job Market/ Employer

Universities are producing fresh intellectuals to be joined with the executive layer and to be the effective decision makers in the country. To make that a reality, we should prepare the undergraduates to meet all the essential attributes. Then only the employers will make

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[2] King, Z. 2003. New or Traditional Careers? A Study of UK Graduates' Preferences. *Human Resource Management, 13*(1): pp.5–27.

[3] Harvey, L., 2003.Transitions from higher education to work (A briefing paper). Sheffield, England: Centre for Research and Evaluation, Sheffield Hallam University.

their hope towards the graduates and go for a sustainable growth as a country.

Employability has been defined by Pool & Sewell (2007)[4] as: *"having a set of skills, knowledge, understanding and personal attributes that makes a person more likely to choose and secure occupations in which they can be satisfied and successful."*

The essential attributes required by the employers have been identified by Pool & Sewell and has developed the "Career EDGE model" to describe them which are as follows:

1. Imagination/creativity
2. Adaptability/flexibility
3. Willingness to learn
4. Independent working/autonomy
5. Working in a team
6. Ability to manage others
7. Ability to work under pressure
8. Good oral communication
9. Communication in writing for varied purposes/audiences' numeracy
10. Attention to detail
11. Time management
12. Assumption of responsibility and for making decisions
13. Planning, coordinating and organizing ability

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[4] Lorraine Dacre Pool, Peter Sewell, 2007. The key to employability: developing a practical model of graduate employability, *Education + Training*, *49*(4), pp.277-289

14. Ability to use new technology
15. Commercial awareness
16. Initiative

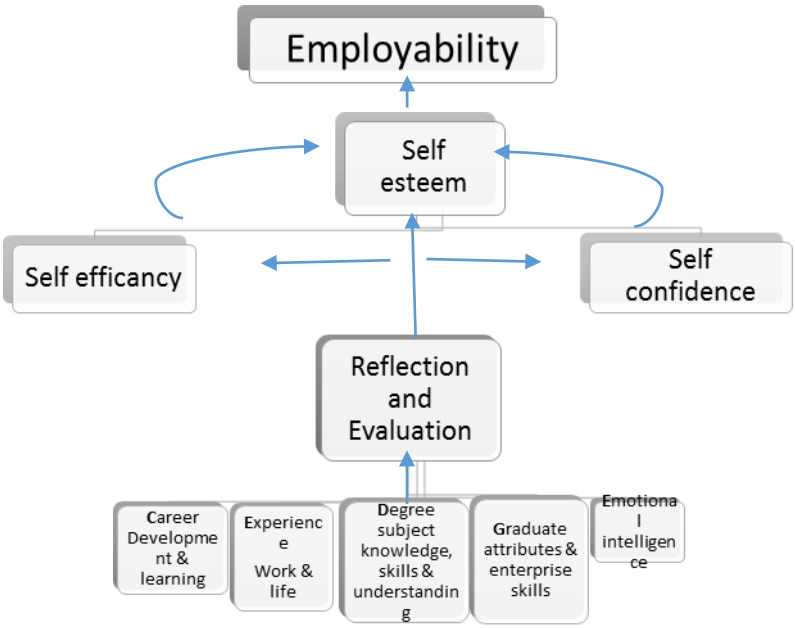

Figure 1: Career EDGE model
Source: Pool & Sewell (2007)

Role of University Education to Incorporate the Employer Requirement to the Graduates

University should not only be a place to obtain a paper qualification to apply for a job but also a place where it keeps ready the graduates with all required knowledge

and skills which enhance the graduate employability and makes them competent enough to play in the dynamic job environment.

To do so, all the attributes expected by the employers should be addressed through the curriculum such as team work, critical thinking, decision making, communication, language and computer skills and ethical conduct etc. The Degree program itself should have mechanisms and strategies to develop the undergraduates' technical and soft skills at the time they passed out from the university.

According to the University of Sydney (1997), a graduate who completes a specific degree program and passes out from the university should equipped with following skills;

Table 1: Graduate's Skills

Skills	Nature of the skill
Knowledge	Having body of knowledge in the field(s) studied
	The ability to apply theory to practice in familiar and unfamiliar situations.
	The ability to identify, access, organize and communicate knowledge in both written and oral English
	The ability to use appropriate technologies in furthering all of the above
hi nk in g ski ll	The ability to exercise critical judgment

	capable of rigorous and independent thinking
	The ability to account for their decisions.
	Able to be realistic self-evaluators.
	Adopt a problem-solving approach.
	Be creative and imaginative thinkers.
Personal skills	The capacity for and a commitment to life-long learning.
	The ability to plan and achieve goals in both personal and the professional spheres.
	The ability to work with others.
Personal attributes	Strive for tolerance and integrity.
	Acknowledge their personal responsibility for: their own value judgments.
	Their ethical behavior towards others.
Practical skills	Be able to use information technology
	Collect, correlate, display, analyze and report observations.
	Apply experimentally-obtained results to new situations.
	Test hypotheses experimentally.
	Apply technical skills appropriate to their discipline.

Source: University of Sydney (1997)

In order to be passed out with above skills which will make the graduates competent enough to reach the

employability, universities can implement and or improve following:

- The teaching and learning techniques should be innovative, and it should be beyond the traditional teaching, learning techniques such as;
    a. Innovative short lecture methodology
    b. Simulation and role playing
    c. The learning portfolio
    d. Problem based learning etc.

- Code of Ethics and Standards of Professional Conduct in each of the degree programs should be incorporated to the curriculum

- Enter in to university and employer collaborations to obtain internships in industry, design and develop the curriculum jointly to avoid mismatches etc.

- Adding noncredit/ credit courses to the curriculum to enhance the computer skills, language skills, professional skills, social ethics and attitude development of the undergraduates.

- Implement actively processing counselling and mentoring programs.

- Online and digital learning technology and blended learning methodologies can be used to enhance the quality of the education and create two-way communication between student and lecturer

- Provide industrial placement opportunities during the study period to gain employment-related skills and develop industrial linkages for the future placements.

- Employer involvement in course designing and delivery to familiar the student about the practice of the theory.

Since the higher education bears a long-term economic cost, it is expected to generate long term economic benefits by producing valuable human resources to the country. Therefore, the graduates pass out from the universities should be able to achieve the specific academic qualification which in turn ensure their employability within their chosen field and being able to add value to the country's economy.

Technology as a Tool and a Catalyst to Change Teaching-Learning Environment

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Role of Technology in Learning Environment

Can you remember your classroom when you were in Grade three? Imagine all the technology that were available in that classroom; A blackboard? Text books? If you would again walk into that classroom today, what would you expect to see? What would be still available? What would be the new additions?

Technology has been a part of teaching and learning environment. It has been integrated into education since many years. It is one of the main resources that teachers use to improve and facilitate students' learning. Technology has changed significantly over years. Although the accessibility of technology is increasing, trained teachers and the use of technology in the learning environment is comparatively low.

Furthermore, there is a belief that merely providing the access to technology is not enough. According to the Organization for Economic Co-operation and Development (OECD), "meaningful development of technology based on knowledge, skills and attitudes is important for all students, to avoid a phenomenon

known as the 'second-level digital divide', whereby people have drastically differentiated skills, which in turn influence how people participate in society". David Miller of Future-source Consulting states that "Currently 13% of the 34 million classrooms globally have an interactive display, leaving a massive 87% without". Hence, the integration of technology in the education process remains a challenge.

As technology has started to play a vital role in everyday lives, it is time to rethink the concept of *embedding* the technology into pedagogy over *integrating* technology into the curriculum. It is important not to use technology for its sake, but moreover to embed technology where appropriate. A teacher must focus on designing the learning experiences to the students while considering the appropriate use of technology.

This article focuses on the technologies that are accessible to teachers to support their teaching. It illustrates the software, applications and other resources that support as tools for teaching and learning. Moreover, the concept of creating an "ideal classroom" with the use of technology is being demonstrated and the benefits and challenges of implementing the technology in the real-world scenario is being discussed.

Teaching and Learning with Technological Tools

Many tools can be used in the classroom to facilitate student learning. This can be varied from traditional to more sophisticated options. Depending on the aims,

objectives and outcomes of the course, the teachers have the freedom to select the most appropriate option to integrate with teaching and learning environment. The students should be good communicators who can discuss and share their ideas wisely with the others. They should have brilliant collaborative skills to work with different types of people. Moreover, they should be able to create their ideas in variety of forms. Hence, this section addresses the methods in which students can learn to understand, communicate, collaborate and create using different types of technologies and how the teachers can utilize technology to support their students in learning.

Using Technology to Understand

Teachers frequently have experiences in asking questions from students and getting no response at all. Even after a well-constructed lesson or lecture, teachers may notice that students are struggling with some content. The common problem is how to find out what students really know and what they have really understood from the lesson taught in the classroom. Hence, there should be innovative methodologies or technologies to check on students' understanding and support their learning. WebQuests are one of the technological tools that can assist in this perspective.

WebQuests

According to "*WebQuest.org*," a WebQuest is an inquiry-oriented lesson format in which most or all the information that learners work with comes from the

web". It is basically a lesson or unit where students use internet resources provided by the teacher to understand and then apply information.

These can be created by using simple programs, such as word processing. WebQuests have a consistent structure:

- Introduction: Introduces the topic and sets the stage to the activity
- Task: Describes the objectives and outcomes of the learning activity
- Process: Lists the steps the students should take to accomplish the task
- Evaluation: Provides a rubric to depict how students' performance will be assessed
- Conclusion: Summarizes what the learners will have accomplished by completing the activity. Additional links can be included to encourage the student to extend his/her thinking beyond the lesson

Sample WebQuests can be seen in,
https://www.educationworld.com/a_tech/archives/webquest.shtml
https://www.educationworld.com/a_lesson/lesson/lesson164.shtml

Using Technology to Communicate

Some educational theories and literature provide a guidance to understand how students learn to communicate. Vygotsky's (1978) sociocultural theory of

human learning describes learning as a social process and the students learn when they interact and communicate with others in the society. Hence, learning happens within the social environment. Therefore, technology can be a facilitator for social interaction and communication among the students in the classroom.

Some technological tools that can be used for communication are blogging, multimedia presentations, email and online discussion forums:

- **Blogging:** This helps the students to gain confidence in writing and speaking. A blog is an online journal exhibiting information in the reverse chronological order, with newest posts appearing first. Here, the user can type, add images, videos and the readers can share their views by posting comments on an individual subject[1].

- **Multimedia Presentations:** These support students to present information in a visual way with options for multimedia. The commonly used tool is Microsoft Powerpoint. If powerful animation is needed the best tool is Adobe Flash.

- **TodaysMeet:** It is a backchannel tool that can be used both inside and outside of the class. It facilitates the students to ask questions and also

[1] Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Massachusetts: Harvard University Press.

to engage in online discussions. https://www.youtube.com/watch?v=3M1PZ_ywNxA , this video provides an understanding about the basic operation and implementation of this application.

Using Technology to Collaborate

When two or more students work together to understand or accomplish a certain task, it is known as collaborative learning. It enriches the student knowledge by sharing responsibilities, enhancing their strengths and peer learning. In collaborative learning, the students work collectively to achieve a common goal through their experiences and knowledge.

Although collaborative learning took place mainly in face- to – face situations in the past, today, with the use of technology it is possible through many other modes such as workspaces, padlet and discussion boards.

- **Workspaces:** It allows the students to collaborate on a topic, create a discussion page and to list some examples.

- **Padlet:** It is a "virtual wall" to enhance communication, collaboration and creativity among students. The students can write a question for discussion, add resources for projects, work in small groups and do brainstorming sessions while connecting with other students in the classroom or outsiders throughout the world.

- **Discussion Boards:** These boards are online forums or online "bulletin boards" which allow the users to share and discuss information and opinions. There are special software available to provide discussion board capability for a website.

Using Technology to Create

According to Blooms (1994) taxonomy, creating is a higher order thinking ability. Hence, creativity plays a major role in the 21st century education. Therefore, both the teachers and students are keen on choosing a range of technological tools such as Buncee, Piktochart and Visme for learning to create in the educational process:

- **Buncee:** This tool can be used for creating presentations, interactive lessons including different types of fonts, animations, images, video and many more[2].

- **Piktochart:** It facilitates to create presentations, social media flyers, info-graphics and TV advertisements.

[2] Blooms, B. S. (1994). Reflections on the development and use of the taxonomy. *Yearbook: National Society for the Study of Education*, *92*(2), 1-8.

- **Visme:** It helps to create reports and presentations while acting as a "drag and drop" tool.

Benefits of Using Technological Tools

Technology has become a key player in the society and its integration into the learning environment enriches the student learning. Moreover, assistive technology can be defined as an equipment that can be used to improve the capabilities for any person with special need. Thus, the use of technology in the educational process can also benefit differently abled students who might be able to perform and interact with the lesson better with the availability of assistive technology.

The effectiveness and efficiency of both the teacher and the learner can be improved by having a better use of technology. These tools can be used to enrich and facilitate more deep and authentic learning. Students should be ready to embrace and adapt into the technological use while the teachers should be open to introduce innovative technologies into the classroom. In this way, technology can be a tool as well as a catalyst for change.

Challenges & Barriers in Using Technological Tools

There are many barriers and challenges that the teachers and learners face when using the technological tools. Those barriers can either be extrinsic to the teachers or internal to the teachers. External or

extrinsic barriers include access to resources, training and support (Johnson, Jacovina, Russell, & Soto, 2000)[3].

Lack of uninterrupted, on-demand access to hardware (laptops, computers), software (reading and writing software and internet browsers), networks (internet connection) and other technologies both inside and outside of school are some barriers that teachers and learners face. Establishing an e-learning/ technology center in the schools open even afterschool and in weekends and identifying some available business/community access that might be "shared" after school hours are possible solutions to this barrier.

Deficiency of teacher expertise with specialized technology skills, insufficient and/or inappropriate technology training opportunities are common reasons for lack of technology implementation in the classroom. Providing contextualized and frequent skill development training opportunities for teachers, offering free professional development courses, online training and continuing support to educators are solutions for lack of teacher training.

Sufficient Technical and administrative support is a key driver for the adoption, utilization, and integration of technology in the classroom. Lack of environmental support which foster the experimentation and

[3] Johnson, A. M., Jacovina, M. E., Russell, D. G., & Soto, C. M. (2016). Challenges and Solutions when Using Technologies in the Classroom. In *Adaptive Educational Technologies for Literacy Instruction*, 13-30.

implementation of innovative technologies paves the way for failure. Hence, it is important to build up a collaborative rapport with all stakeholders to nurture an effective utilization of technology by teachers and students. Attitudes and beliefs, resistance towards technology in the classroom and their knowledge and skills are internal barriers to technology adaption in the classroom (Johnson, Jacovina, Russell, & Soto, 2000).

The attitudes and beliefs of teachers is one of the cruicial factors that determine the success of technology implementation. Although there are plenty of the technology available in the learning environment some teachers may be reluctant to adapt new technologies. This may be because most of the current teachers grew up without the access to the technologies, but the students today are nurtured in a technology staturated environment. Hence, the teachers may lack in confidence in technological skills and knowledge.

Therefore, boosting confidence in technology use, adequate training and support from the adminstrators, providing non-monetary means of incentivizing technology integration efforts in the classroom (donated gift certificates, complimentary dinners, vacation days, etc.), introducing technology awards as teacher appreciation efforts may help to reduce teachers' resistance towards technology use in the classroom.

Teacher's knowledge and skills in the technology usage are important factors in this perspective. Hence, providing continuous knowledge to enhance the

technological skills in the learning environment is essential.

Proposed 'Ideal Classroom' with the Use of Technological Tools

The future *Ideal* classroom must be built from an ordinary classroom, which is an ideal one for teachers and students as well. Firstly, the basic factors to build up an ideal classroom will be identified. Mobility, home-like atmosphere, fostering learning environment and provision of adequate multimedia tools can be defined as the basic factors for building an *ideal* classroom (Milnar, 2008)[4].

Mobility

There are two main considerations in this factor. The first step is to rearrange the wiring system in the classroom in way that supports charging of multiple computers, plugging the projector and having interactive white boards. The second step is installing tables and chairs and other furniture which allow for an easy and quick arrangement of the classroom for different types of learning (individualized learning, pair work, and group work) as indicated in Figure 1, while few possible seating arrangements are given in Figure 2.

[4] Milnar, G. (2008). *New ICT Tools in Education - Classroom of the Future Project*. Szeged: University of Szeged.

Figure 1: Mobile furniture which allows for an easy rearrangement

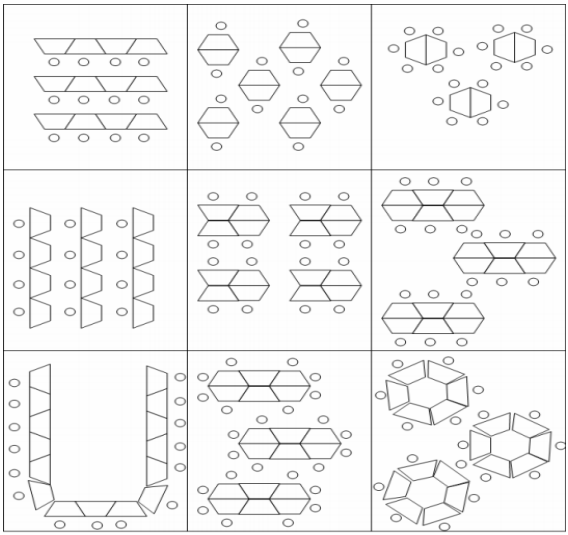

Figure 2: Some Possibilities of Seating Order
Source: (Milnar, 2008)

Home-like Atmosphere

The colors of the walls and curtains play a major role when producing a home – like atmosphere in the classroom. The most preferred color by the institutions in "white". But according to literature, light yellow – orange which promotes a cheerful, lively and sociable moods is more suitable for classrooms (Nuhfer, 2004)[5]. Hence, a classroom can be designed by having light orange or beige colour to the walls, white curtains to cover the windows and chairs covered with blue textile as shown in Figure 3.

Figure 3: Colors of the Ideal Classroom
Multimedia Tools

[5] Nuhfer, E. B. (2004). *Some Aspects of an Ideal Classroom: Color, Carpet, Light and Furniture.*

An *ideal* classroom should be well equipped with modern technologies. Wireless technology, multimedia laptops, visualizers, video projectors, digital cameras to record microteaching sessions can be used as effective tools to design and develop the *ideal* classroom.

Faculty of Applied Sciences, Wayamba University of Sri Lanka has followed this approach for a certain extent and designed an "Interactive Learning Centre" as given in Figure 4.

Figure 4: Interactive Learning Centre, Faculty of Applied Sciences

Effective Computer-Based Teaching & Learning in Higher Education

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Introduction

The emergence of globalization concept demands for a conversion from traditional and formal education to enable new forms of teaching and learning which support to deal with complex global challenges. During the recent years, the use of computers and technology in teaching and learning in higher education has been drastically increased. According to Ward *et al.* (2001)[1], the introduction of networked computers into the academic environment has meant that communication and searching for information through the internet have become important skills for both students and teachers to learn.

Learning Management Systems (LMS) provide an effective and efficient mode for computer-based teaching and learning. Higher education institutes can establish

[1] Ward J.P.T., Gordon J., Field M.J. and Lehmann, H.P. (2001). Communication and information technology in medical education. *Lancet*, ***357***, 792-796.

LMSs which are customized as per their requirements in order to provide computer-based teaching.

The students in modern generation is much more interested in web-based learning since they are living their lives in a virtual world with mobile phones, messaging applications, chatting groups, and social networking. They prefer to learn with web-based technologies rather than being in a traditional face-to-face lecture.

Therefore, being aware of the possible uses of computers and technology in teaching and learning process has become very important for the academics, and it is imperative to study its effectiveness in relation to the forms of teaching it replaces.

As an Effective Teaching Solution for Mass Classroom

In recent past, student enrollment to higher education institutes has been widely increased. For the mass class rooms, Lecturer's due attention cannot be given for each individual student. Though the small group discussions and tutorial classes can be used to overcome this difficulty, the lack of human and physical resources and time allocation for facilitating such classes for several groups is challenging.

These issues have led to have a thought about encouraging self-directed learning among the students. Computer and internet services can be used to facilitate for an effective self-directed computer-based learning.

The difficulties faced by the student and teacher in the mass classroom can be avoided with the computer-based learning.

In computer-based teaching and learning process, downloadable versions of lecture notes, tutorials, handouts, PowerPoint presentations, web-based exercises, practice quizzes, additional readings, supplementary documents etc. can be included to extend lecture material in an interactive learning environment.

Other administrative information such as course outlines and overviews, intended learning outcomes, timetables, guidelines and instructions on self-learning and assessments, staff contact details etc. can be provided using the computer-based techniques. When these materials are readily available for the students they are motivated for self-learning.

As a Learning Alternative for Students who are Studying while Working Part Time

As a latest trend, most of the students are willing to do part time jobs while engaging in the higher studies. Fixed scheduled, traditional lectures will not support them to continue studying while working part time. However, instead of traditional lecturing method, computer-based teaching and learning process will enable students to catch up on any missed lectures while allowing them to actively participate in self-learning in their own time and do not have to necessarily attend scheduled classes.

Since the computer-based learning mode is time and place independent, there is a high flexibility regarding when and where students access the courses and assessments. This flexibility may attract more students for the studies.

As a Measure of Understanding and Higher Order Thinking of Students

When students are provided with a variety of learning experiences using computer-based resources, those experiences would encourage students to have a deep approach in self-learning. Students can actively explore the concepts taught at the face-to-face lectures in depth in their leisure time and test their understanding and knowledge through the web-based assessments. These assessments can be developed to examine factual knowledge and complex judgmental abilities such as critical thinking and problem solving which are usable in diversified situations.

Students can engage in the online assessments and submit the answers by electronic means. System will make available systematic and comprehensive information on the actual performance and achievement by the students. Since the students can receive the results and feedback on their performance personally, they can identify their weaknesses and deficiencies in their performance. Lower performance due to lack of understanding and critical thinking can be avoided through revising difficult areas.

As a Well-meaning Communication Mode Between Teacher and Learner

While using the computers and internet for teaching and learning, it will provide a better platform for a better communication between the Teacher and Learner. Students can communicate and collaborate with each other and contact the Teachers for help. Students can make queries and ask for further clarifications regarding complex and confusing areas using web conferencing, text chat opportunities and open discussion forums, despite the limited opportunities to contact the teacher and being silent in the mass classroom.

Computer aided teaching process facilitates for an effective communication between Teacher and Learners while creating a participatory, interactive and more inclusive teaching and learning environment.

As a Method to Reduce the Unnecessary Time Consuming and Workload of Teacher

Computer aided teaching can be used to reduce the time spent by the Teacher in administrating the course and assessments. The online access to the teaching materials can be granted to the students without taking an extra effort. The instructions, guidelines and other administrative information can be conveyed easily via the web.

The assessments are conducted automatically, and answers are marked by the system. This will reduce the

time spent for individual and manual marking. System will automatically record the marks and likelihood of having errors and mistakes is very low. Since the system itself provide a feedback to the student on their performance, Teacher's time consumed for the marking answers, recording results and giving feedback to the students can be saved.

The web based open forums provide an open platform to have discussions with Teacher at any time while saving the unnecessary time consuming by both the Teacher and student for physical meetings.

Student Feedback on Computer Based Learning

In computer-based learning, students have more responsibilities placed upon them than traditional face-to-face learning environments. Because, with the computer-based learning system students may be required to download course materials, access internet links, participate in on-line discussions, or meet deadlines that don't coincide with class lectures.

Therefore, self-regulated learning is essential for the web-enhanced environment to be successful. Students must become active learners rather than passive learners. Self-motivation requires students to commit to the technology and to the course (Hermans *et al.*, 2009)[2].

[2] Hermans, C.M., Haytko, D.L. and Mott-Stenerson, B., (2009). Student Satisfaction in Web-Enhanced Learning Environments. *Journal of Instructional Pedagogies*, 1.

Numerous studies have been conducted to find out the effectiveness of computer-based teaching and learning in higher education by evaluating the feedback of the students.

Freeman (1997) conducted a study to find the outcome of a web-based teaching trail involving 550 undergraduates. The results of the study confirmed that students largely have positive perceptions of the interactive features, self-assessments, and monitoring facilities in the web-based teaching program. They have appreciated the ready access to online information. As per the most of the students' opinion the web-based learning environment encouraged them to understand and take a deeper approach to learning.

Kiser and Toreki (1997), found with their study students highlighted very positive responses to the web-based teaching. Further they have found that students prefer more web-based learning sessions since they believed that web-based learning had positive impact on their grades.

Dewhurst *et al.* (2000) carried out a study to find out whether the independent student learning supported by computers is acceptable as an alternative for lectures. They found out that students were able to organize their studies effectively using computers and students had positive views about using computer-based learning.

Henly and Reid (2001) examined the success of use of web to provide learning support for a large metabolism

and nutrition class. They introduced a web-based learning package which includes lecture materials, tutorials, practical class exercises, web-based self-directed learning assignments, formative and summative assessment tasks etc. The results indicated that student usage of the site was mostly high though it is varied broadly among individual students.

The students who used the web site more often and in an effective manner, has achieved higher marks for the formative assessments than the students who had a poor usage of the website. Further, the feedback regarding the website was highly positive while most of the students responded that the course materials and assessments in the website were very useful for their learning.

Robin (2004) conducted a study to assess the kinds of changes that occur in face-to-face lecturing when the courses are supported by web enhancements. Study indicated that adding the web-based components to the lecturing has led to improve the preparation for class and this increased preparation contributed to greater student engagement and active learning in the classroom. The availability of preplanned, well designed mediated materials in the classroom has improved students' interaction with the teacher rather than taking notes.

While some of researchers found that there is a positive feedback regarding computer-based learning, some of the studies have revealed that in some cases students perceive negative points regarding computer-based

learning. Alan and Sarah (2003) investigated the effectiveness of computer-based teaching packages in supporting student learning. The results showed that computer aided teaching packages are effective in imparting information as traditional lectures and the students value the opportunity to reinforce their learning through interactive lecture notes and self-assessment quizzes. However, the students have expressed clearly that they would not like to have too much of their lecture time replaced by computer packages.

According to Vamosi, Pierce and Slotkin (2004), the student satisfaction in a web-based accounting course was significantly lower than the expected outcome. This was mainly due to their lower relative satisfaction with the distance learning delivery mode. Students' opinion was that online components were less interesting and less efficient for learning than the traditional lecturing method.

Eom, Wen and Ashil (2006) conducted a study to investigate the determinants of students' perceived learning outcomes and satisfaction in online education in university system. They have identified student self-motivation, student learning style, instructor knowledge and facilitation, instructor feedback, interaction and course structure as the determinants of students' perceived learning outcomes and satisfaction in online education in university system. However, the results of their study indicated that online education is not a universal innovation applicable to all types of instructional situations. Their findings suggest that

online education can be a superior mode of instruction if it targeted to learners with specific learning styles such as visual and read/write learning styles.

According to the past literature, students have had both the positive and negative opinions regarding the computer-based learning. However, the negative opinions do not indicate that students rejecting the computer-based education. Students do not prefer too much of their lecture time to be replaced by computer-based learning. These results emphasize that there should be a proper balance between didactic classroom teaching and self-directed learning via the computer-based resources. Therefore, the teachers who are seeking modern ways to teach students should avoid overuse of computer-based teaching.

Majority of the course should not be covered with computer-based teaching. It is better to provide variety of learning experiences through computer-based teaching in order to encourage students to take a deep approach for self-learning. However, a considerable amount of teaching hours should be covered with face-to-face lecturing and small group tutorials. These lecturing methods can be supported by computer-based resources which will reinforce the major concepts which were introduced in face-to-face lectures. It will allow students to actively explore those concepts in deep in their leisure time and assess their own knowledge and performance via online assessments and tests.

If the objective of introducing computer-based learning is to enhance learning outcomes, then the technology

should be designed to encourage students to take a deep approach for learning. Here it is not expected to remove the role of the teacher. Teacher will act as a primary facilitator of student learning while designing an interactive learning environment.

Challenges in Applying Computer Based Learning

The transformation process from traditional teaching and learning system to computer-based teaching and learning system would require an expensive process which would require an adequate amount of resources, time and considerable expertise knowledge. Higher education institutes should facilitate the Teachers with the required capital for an optimal usage of computer-based resources in teaching.

Students with limited financial resources may not have the ability to incorporate computer-based learning at their personal level. Therefore, technological support should be provided by the institutes through establishing fully equipped computer laboratories with internet facilities. If the students are facilitated with the required resources, they are encouraged to use them.

It will require dramatic changes in mindsets of teachers, students and administrative staff about computer-based teaching and learning process. All the parties should be well informed regarding the positive impact of computer-based teaching and learning.

Most of the students and teachers may hesitate to engage in computer-based teaching and learning due to

lack of basic knowledge on operation of computers and their applications. Their motivation may be reduced since they are experiencing technical problems. Therefore, at the beginning of this process, it is essential to establish a proper way to give the fundamental knowledge on computer-based teaching and learning. The direct instructions of learning and using the computer-based resources and tools should be a prerequisite in computer-based teaching.

Using technology for teaching should not make barriers to students for their education but should encourage and enlighten students' learning. Teachers should try to achieve an optimal mix of face-to-face lecturing and computer based self-directed learning while overcoming the challenges in applying the same in teaching learning process.

Industry Oriented Teaching for Construction Technology Stream

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Technology and Engineering fields are always subjected to noteworthy challenge within the university education. Construction industry anticipates an innovative and creative academic practice that delivers students with a hands-on practical knowledge and graduate ready skills for future careers. Teaching highly application-oriented courses while keeping students' interest will generate scholars to passionate professional expertise in the future.

The teaching environment in construction technology is insufficient for students to become a skillful professional. The practical role of technology is gained through working on real-world problems in an industry collaborative environment through projects. Industry-academic collaboration seems to be actively increasing in the development of technology education in various parts of the globe. The close relationship between industry and academia is a crucial component of the engineering pedagogy to raise student engagement in the industry through construction projects.

In today's large-scale constructional boom, companies tend to prefer graduates with design skills as well as

site working skills. Thus, universities should facilitate and accept the challenges of interacting with students with industrial experiences. The learning environment in most universities is inadequate for students to become a skillful graduate. The practical components of engineering applications must widen within the undergraduate education.

Practical teaching and learning for construction technology can be discussed in the following disciplines:

- Lessons Structure
- Problem-oriented Teaching
- Project-based Assignments
- Laboratory Experiments
- Evaluation Criteria

There is solid evidence to prove that practical learning can aid in design & construction phases. Providing students with industrial problem examples rather than "dry" academic assignments can boost student interest and motivation. On the other hand, a problem-based classroom approach can yield a rich learning environment which stimulates communication collaboration, and self-directed exploration of the instructed principles.

Technological courses outcome leads to industrial working opportunities. Without having the adequate industrial based knowledge, a scholar needs to struggle more to overcome the competencies.

Availability of the theoretical background alone will not keep him survive in a highly competitive environment.

Critical thinking skills and analytical capabilities have to be developed during the learning stage. As more and more curricula change in advance of project-based teaching enters to European universities, it's time to make that difference in the local system too.

Construction technology extends for a wide range of fields such as Road/Highway, Building, Underground, Water treatment plants and special structural constructions. Construction technology stream scholars must grasp the preliminary engineering concepts thoroughly to match with the industrial requirement. This article is trying to furnish evidence with examples for each of the above disciplines.

1. Lessons Structure

As per the Oxford Advanced Learner Dictionary, *'Lesson'* is a period in which somebody is taught something. Teaching methods and practices may vary within the disciplines, students' background knowledge, lecturers' attitude and expected learning outcomes. Sri Lankan higher education system has not targeted the industrial requirements and application-based approach rather than teaching practices focused on factual knowledge transmission. Majority of the developed countries using this as an effective teaching method.

Construction technology stream scholars need practical skills more than as academic factual knowledge. Hence, when considering Blooms Taxonomy, the Educational Objectives for Skills-Based Goals are;

- Perception: Uses sensory cues to guide actions

- Set: Demonstrates a readiness to take action
- Guided response: Knows steps required to complete the task
- Mechanism: Performs task or objective in a determine the quantity
- Complex overt response: Perform task or confident, proficient and habitual manner
- Adaptations: Being able to modify the actions to suit the new problems
- Organizations: Creates new tasks or objectives incorporating the learned one

Hence, lessons of the technology stream should be arranged in a way that hands-on skills are developing in most of the aspects. Technological stream applications must be clearly delivered to the students rather than waiting for the end of the lessons to discuss them because the student gets fatigue at the end of the two hours session to concentrate on the most required potion in the lessons. So be concise and early introduce with the applications.

At the end of the lessons the students can be directed to find more applications in different industries. Doug Lemov stated that *"Don't waste time designing overly complex learning experiences. Instead, keep it simple. Select the activity which gets your students to the endpoint as directly as possible"*.

Before starting the lessons be very clear with the application of the respective theorem in the industrial field. If the lecturer does not possess a deep application

background, he can get help from the industrial experienced individuals. Since these subjects are skill and application-based, the best way is to assess through a practical examination.

Teachers must allocate hands-on activities to students alternatively asking them to mug up the theory. Activity-oriented planning begins with recognizing an activity and reverse engineering the learning intentions. Over time, this can lead to an exercise in keeping students extremely busy. The substitute is backward planning: taking time to get excessive clarity about what you want your students to have learned by the time they walk out the classroom at the end of the lesson.

Practical oriented teaching in construction technology stream is very important for students to obtain hands-on experience and to enhance their ability to solve construction related problems. *Xiao Feng, Dr. Tongji University of Shanghai* consider it to be a systematic method, emphasizing it in various course teaching and project training. The objective is to develop the basic engineering skills, promote the students' learning interests, and fill in the gap where the specialty course.

2. Problem Based Teaching

Problem-Based Learning (PBL) is a teaching method that has been using over the years in European technical education. The technique is student-centered with teachers taking the role of a facilitator. Its fundamental objectives are to build a knowledge base, develop problem-solving skills, teach effective

collaboration and provide the skills necessary to be a successful lifelong learner.

The initial Swedish Education execution of PBL was mixed with many students fully engaged in the material, but others found the approach insufficiently structured. Some scholars were not able to adapt to the unusual challenges of PBL, partly because it was their first exposure. When questioned about what they had gained from their PBL experience, the students reveal the technical prominence rather than the problem-solving skills. In succeeding years, a more guided project-based learning approach was introduced, which improved students' overall satisfaction and performances.

Considering students' age and prior experience with problem-based learning set a reasonable scope for the activity. As per the J. Codd, "Teachers" as 'managed professionals' Once you have selected a problem, gather students to discuss project goals, deadlines, and materials, and to brainstorm some action steps for the project. An instructor can make sure the assignment has no one right answer. Allow the students to drive the discussion and do the real, "messy" work—Instructor's job is to offer gentle direction and answer questions. Furthermore, recognize how students will present their solution to the problem. An ultimate creation could be anything from a convincing letter or series of graphs to a multimedia presentation.

It is inescapable that scholars will sometimes drag into problems when trying to complete projects.

Conceivably one of the most frequent barriers is a lack of community aid. Occasionally students might need to contact local construction companies or engineers for support, but not all of them will be willing to contribute—or, at times, even take young people seriously. Another common barrier is lack of resources, especially when problems require certain materials or off-site excursions. View these barriers as prospects for students to develop their communication skills and problem-solving insight. Support them learn how to compete within time and budget constraints. These skills and capabilities will serve them as professionals.

3. Project Based Assignments

Once an instructor has comprehended intended learning outcomes of the construction technology, the instructor can go on to design the assessments that will provide evidence of student learning, and ultimately plan guidance and activities that will help students to reach these understandings.

- Project Based Learning (PBL) involves assignments that call for students to produce industry related work, such as a concrete mix design, a structural simulation, or the design of a building and the analysis and interpretation of the data. Construction works generally carried out as projects. PBL is a pedagogical model that organizes learning from projects as an assignment. Thomas, J.W. (2000) A Review of Research on Project-Based Learning, suggests the following attributes regarding the question "what must a project have in order to be

considered an instance of Project-Based Learning".

- PBL projects are predominant, not secondary to the curriculum. PBL projects are concerned about doubts or problems that "drive" students to encounter (and struggle with) the major concepts and principles of a discipline.
- Projects involve students in a constructive investigation.
- Projects are student driven to some extent.
- Projects are realistic, but challenging tasks.

They are more productive within PBL as the scholar learn the specific topic, then immediately apply the knowledge to the project as opposed to applying the learned techniques at the end of the semester when the project is due. PBL has been increasingly applied in higher education.

The use of PBL helps students develop a range of skills, including problem-solving, group work, critical analysis, and communication. Application in construction management programs has found in the past two decades by PBL.

A Project Based Learning (PBL) system has been implemented in a project management course that is empowered towards the concrete industry. This course is a junior level course that is required for all Concrete Industry Management (CIM) students at a Bachelor of Science degree offered at Texas State University.

4. Laboratory Experiments

Typical Construction technology deals with the Structural, Geo-Technical, Transportation, Surveying and Environmental laboratories in the undergraduate level. In these labs, students are focused on the application on their own while performing lab experiments, analyzing results, and interpreting results. These lab experiments play a key role in the industrial application-oriented learning. Students have the chance to use the instruments in the lab with the help of a demonstrator and to get familiar with the equipment. There is highly valuable equipment where special care should be given. The student identifies the precatory specs and safety and health concern matters.

Quality control and quality assurance in the construction industry is a governing factor in selecting the best among competing companies. Quality Assurance and Quality Control (QA/QC) works are carried out by laboratory or in-situ experiments. Therefore, technological students face several numbers of laboratory experiments in different types of construction projects such as Building construction, Road constructions, Water supply, and Sewerage systems and Geotechnical structures. Doing laboratory experiments which are highly expensive may not be a practical solution, but the most common and widely used laboratory experiments can be arranged in the university laboratories.

Doing all the test on one discipline may not be a practical solution but for a student who has selected his

specializing field can concentrate on his priority field and ignore the rest of the lab experiments. Gaining knowledge in the desired field will be an added advantage for him to survive in the construction industry. More skillful handling of equipment and quality maintaining experience is an added advantage for the scholar in future.

5. Evaluation Criteria

Examination questions or assessments must be related with the construction industry applications where evaluator should thoroughly be aware of the attributes of a good test, e.g. validity, reliability, and usability the steps required to construct an exam question.

Examinations have always been an important part of the university education. Examinations are designed and administered at different stages of education such as each class assessments, mid exams, Exams. Their results are used for various purposes like improvement in learning, grading, and classification of students.

Construction industry requires people who are capable of applying their knowledge in different situations rather than doing repetitive works in each job or memorizing what the solution is like to be. Therefore, it should not be an exam which tests the memorization ability of the student because the construction industry needs people who have the capability to apply their knowledge rather not checking memorizing ability. The final objective of the exam is to judge how far a student can apply their theoretical knowledge in applications.

Examinations are organized activities aimed at determining the cumulative or broad knowledge in a students' educational development (Tobih, 2012), which have been widely used to evaluate student's success and performance in the university. Tobih explains that it helps to establish the integrity of the degree or certificate awarded by any higher institution.

The examiner must consider the validity and reliability of the test instruments used for this purpose. Under a favorable condition no matter what effort went into the preparation of the test. Thus, examinations serve evaluation purposes and are meaningful to all parties involved if it is used to motivate average learners.

Assessments differ widely in nature and quality. Assessment policies, as well as practices, are often applied in different ways across institutes and university programme. It is an organized system prescribed for testing qualification, an exercise designed to examine progress or knowledge (Tobih, 2012). Diverse means of measuring students' success exist, and this includes Continuous Assessment (CA) and Examination, Grade Point Average (GPA), Graduation and retention rate.

There are range of factors affecting the quality of performance of undergraduate students in construction technology stream. In identifying these factors affecting the quality of academic success, a series of variables are to be considered. The current undergraduate curriculum must be revised with focus on job-based education. Professionals opinion is to gain specific skills are the key requirement for any job role. But these skills

can be acquired along with education. The objective of acquiring the right skill set should go along with the purpose of education.

On-Line Education: Advantages to the Learner and Higher Education Institutes

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Introduction

Now we are in the digital era. Technology is changing day by day. Most of the developed countries compete to find new technology and implement in various industries. In economics productivity is a function of technology, Labor and capital.

$$\text{Productivity} = T\left(\frac{K}{L}\right)^{\alpha}$$

Where, T = Total Factor Productivity (Technology); K = Capital; L = Labor, and α = Share of output allocated to capital[1]

It is hard to find an industry that does not affect from the changing technology. But there are some conflicts how the new technology uses in some industries. Education is one of the major areas which have

[1] Schweser, K. (2017). *Schweser Notes for the CFA exam prep 2017.* 98th ed. New Yoke: Kaplan, Inc., p.281.

arguments to implement the new technology. Most of educational Institutions and collages use new technology to give better learning experience for their learners. On-line education is one of the sub areas which can be identified within the new digital era. Most of the people have misunderstood that the on-line education is totally based on computers. Therefore, it would be difficult to have a productive understanding on on-line education without a workable definition.

"On-line Education is defined as: any form of learning that utilizes a network for delivery, interaction or facilitation. The network could be the internet, a school or college LAN or even a complete WAN. The learning could take place individually (guided or instructed by a computer) or as part of a class. On-line classes meet either synchronously (at the same time) or asynchronously (at the same time), or same combination of the two"[2]. The definition is broad. But it helps to establish the boundaries of the topic.

Advantages of On-Line Education

There are two major parties in on-line education, Individual leaners and Institutions who provide on-line educational services such as corporations, schools and colleges. They seem to be the stimulators of on-line education interests. Let's look at the benefits of them firstly.

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[2] Learnersedgeinc.com. (2000). *Continuing Education Courses for Teachers | Learners Edge.*
Retrieved on: 20 Oct. 2018 <https://www.learnersedgeinc.com>

Institutional Advantages

Expanding the business without any boundaries. Students or learners of an educational institution are considered as customers of them. Increasing the customer base is a vital part to maximize the revenue. In traditional class room educational system creates locational boundaries to reach the class room by a distance learner. That means an UK student is unable to reach or follow the courses conduct by a Sri Lankan institution, even if it is so rare or important. But on-line education cut-out such locational boundaries.

Speed of Development and Delivery

Traditional paper-based teaching materials and instructions are consuming considerable time to reach the end point. But electronic based materials meet the just-in-time learning needs of the corporation better than much of the formerly provided classroom instructions.

Learning Flexibility

On-line education provides a better platform to be more flexible according to the learners and teacher's own schedules at dispersed locations.

Cost Savings

Cost is a considerable constraint in decision making, even though it is a profit oriented or non-profit oriented. Therefore, minimizing of cost is creating

productivity and save resources to other alternatives. There are so many empirical evidences related to the cost savings in on-line education.

"IBM is reported to have estimated savings of $175 million in 1999, computed at $490 per student day in avoiding such expenses as travel, course fees and other inefficiencies of classroom instruction."

"Cisco systems reportedly save at least $240 million annually, allocated at $12,000 per year for each employee who previously would have attended four classes a year" (Terry, 2000).

Learner Advantages

Reduced Time and Cost for Learners

Most of adults have commented on two major obstacles to continuing to learn. First one is "Lack of time" and the second obstacle is "Lack of money". But on-line education provides answers for both obstacles in an easy way. It may be less difficult to go your computer desk at home or work than to travel across town or even to another building in your work complex.

Convenience of Any Time and Any Place

This advantage occurs mostly with asynchronous modes. According to this mode, it is no need to meet an instructor or trainer at a scheduled time as per a traditional class room session. If the learner travel and work at different locations, this flexible schedule system

provides a sound foundation to continuing their learning experience.

Repeating the Practice and Ease of Review

There are some specific formats and contents available to create an opportunity for repeating the practice and review their works by themselves. Let's take an example that some popular computer software training packages available with CD's provide unlimited opportunity to practice at any time. Thus, it can be used virtual reality-based programs in health care and military that provides safe practice opportunities in real world. Then learner would be able to take the real-world experience with saving time, money and human life.

Freedom to Learn

This is the most powerful advantage among others. Because leaner will be highly motivated, if they are in asynchronous mode. That means, if the learner can choose the topic, time and venue, he/she will have a self-motivation to continuing the education. But the extreme freedom causes some negative impacts to the motivation of leaner.

On-Line Educational Modes

In on-line education there are various delivery modes, media formats or products and delivery processes. On-line educational modes can be divided in two major parts in broadly according to the nature of leaner-

facilitator interact. Those are asynchronous and synchronous modes.

In asynchronous mode, the contribution of the facilitator is temporally static. The learner can interact the information presented by the facilitator at any time, any place. Information provide in the form of wordbook (print) completion, voice recording or video recording. Feed-back is playing a vital role in the interaction between facilitator and leaner. It also be provided in such a manner (word book or recording) then a human, or an electronic program will evaluate above responses and send-back to the leaners.

In synchronous mode, the learner and facilitator interact directly. In other words, the feed-back will be provided instantaneously. Therefore, it is referred to as the "Active on-line communication" between facilitator and leaner. Most of academic courses and programs are not designed as two-way communication between the learner and facilitator. Instead of that, they use chat rooms, video conferencing, voice calls between learners and facilitators. Those methods can be identified as synchronous modes.

Table 1 reports various types of on-line education modes, media and characteristics.

Table 1: Types of On-line Education

Modes	Media	Format	Characteristics
Asynchro nous	Computer/CD/ Disks/On-line	Structured/ Unstructured	Individual interaction
	Radio	Structured	Individual interaction
	Television/Video tapes	Structured	Individual interaction
Synchron ous	Computer on-line chat rooms/ Shared whiteboards/ Application sharing/ Television and videoconference	Structured	Interpersonal interaction
	Radio/ Special crystal/ Dedicated line	Structured	Interpersonal interaction
	Television or dedicated line/ Television and videoconference	Structured	Interpersonal interaction

Assessment

The word "Assessment" senses an examination of the learners as traditionally, but it is not. Assessment is somewhat border than conducting just an examination. Let's look at some border definitions provided by an educational researcher;

"Assessment is defined as the systematic basis for making inferences about the learning and development of students. More specifically, assessment is the process of defining, selecting, designing, collecting, analyzing,

interpreting and using information to increase students' learning and development"[3].

Now the problem is how to accomplish attributes of above definition through the on-line education. There are several ways to assess the on-line learner, such as;

- On-line Examinations
- Task-Based simulations
- Branching Scenarios
- On-line group collaboration projects
- Open-Ended Questions
- Problem-Solving case studies
- On-line Interviews
- Let's take above methods one by one
- On-line Examinations

Traditional physical Examinations are familiar with every person in the planet. But this is about on-line examinations. There are so many methods to an on-line examination. It can be multiple choice, essay types or even true or false questions. Most popular method is multiple choice questions, because it is easy to evaluate than easy type questions. There are so many software platforms facilitate for online examinations (moodle). According to such software platforms, facilitator should enter questions and answers in to a question bank before conducting the exam. Thereafter learners can access the exam in any place, at any time. If there is a time period defined by the facilitator, then the learner should access the exam with in such defined time period.

Even through there are so many advantages in this method, there are several drawbacks inherited. Among them, difficulty to identify the true candidate, non-secrecy of exam paper, candidates can use reading materials during the exam what traditional examination is disallowed generally.

Task-Based Simulations

In this method, facilitator provides images, videos, background sounds or animated characters or units to give real world experience relevant to some specific situation. Then learner should take correct decisions according to such unexpected incidents within a given time period. Then, he/she will be assessed according to the accuracy of their decisions and time period taken to a decision. Therefore, on-line learners should use all their resources and skills to complete the task in a safe virtual environment.

Thus, it would be assessed proficiency without taking any real-world risks. There are some software's available to provide these simulation experience. This method is used to assess learner decision making skill without any pressure, such as pilot training programs.

Branching Scenarios

This method involves multiple decision points that lead on-line learners down different paths. Once the learner finishes one choice then he/she will be closer to the outcome by one step. Their outcome is based on the negative or positive consequences of previously taken

actions. Therefore, learners must use their knowledge and skills to identify the level of importance of decisions among sequence of decisions. This type of assessment method is used for on-line cookery courses.

On-Line Group Collaboration Projects

In this method, facilitator requests to on-line learners to divide into groups and assigning them a topic or prompt. Then they must work together and complete the task and create the finished product, such as on-line presentation, report or video. Then facilitator will exchange the final product with other groups and provide them a chance to judge others work and commented on what are the strengths, weakness and future improvements needed to be done. This type of an assessment method increases the learner team working skills, leadership skills, and judgmental skills. In management of most of the on-line courses, this method is used to assess the learner knowledge experience with in the course.

Open-Ended Questions

This is a kind of most simple and straight forward qualitative on-line educational assessment method. Open-ended questions are like the other essay type questions but only difference is, there is no right or wrong answers. Thus, learners have creative freedom to answer the question. Therefore, on-line leaners must reflect on the topic and draw their own conclusions.

This method improves the creative skills of the leaner within the subject area. But there is a disadvantage that this type of assessment is difficult to grade fairly, because there is no any specific answer. Generally political science and logic courses use this method for assessing the learners.

Problem-Solving Case Studies

In this method, learners are given a problem-based case study and provide answers for the case problem. It may be an actual real-world case or an assumed case study. Most of the case studies do not provide the problem with case study itself. Therefore, the learner should identify the problem as well. Problem solving case study method improves the strategically and analytical knowledge of the learner. Most of higher-level management training programs use this method.

Online Interviews

It is impossible to conduct a face to face interview with in the on-line learning environment. But it can be conducted a video conferencing interviews to assess the learner. They should give answers to the panel of interviewers or one interviewer. Within this method learner should give answers for the questions quickly.

Potential Problem Areas

There are some problematic areas in on-line education. It can be identified following problem areas as follows.

- Educational institution or facilitator must incur considerable amount of initial cost to implement this kind of method.
- Disruption of WAN or LAN can negatively affect to the continuing learning.
- Difficulty to identify the true person for assessment.
- Extreme Freedom can cause to negative motivation for learners.
- It does not provide the class-room experience for the learners.
- Lack of computer literacy affects for working with on-line education

Individual vs. Collaborative Group Assessments in Mathematics

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Assessment in Mathematics

Mathematics is not just a prerequisite subject for prospective scientists and engineers but is a fundamental aspect of literacy in the twenty-first century. Mathematics is often known as a difficult subject, creating considerable anxiety among students. For most of the mathematics learners, it is not something that comes intuitively or automatically, rather something that takes plenty of effort. It is a subject that often requires students to spend more effort, time and energy.

To be effective, mathematics education must be rooted in the practice of mathematics and in the art of teaching. Assessment plays a major role in teaching and learning process of mathematics by facilitating the monitoring and assessing the progress of students in understanding mathematical concepts and in developing mathematical skills: simply illustrating how well students are learning mathematics. High-quality assessment of mathematics teaching and learning should focus on the interaction of assessment with learning and teaching.

Assessment measures what students know and what they should learn. It does not simply mark the end of a learning cycle, rather, it is an integral part of teaching that encourages and supports further learning. A well-prepared assessment can be a useful learning experience, challenging the mathematical thinking of the students. Assessment of student performance should be a continuous process that involves many sequential assessment activities of different nature. Students should play active roles in assessment procedure so that each assessment experience would also provide an educational experience.

Mathematical Sciences Education Board (MSEB) of USA, has listed three fundamental educational principles, which form the foundation of all assessments that supports effective mathematics education, namely content principle: assessment should reflect the mathematics that is most important for students to learn; learning principle: assessment should enhance mathematics learning and support good instructional practice; equity principle: assessment should support every student's opportunity to learn important concepts of mathematics (MSEB, 1993). There is no single way to assess how well students learn.

A variety of assessment instruments could be used simultaneously to enable the teacher to enhance students' mathematical knowledge, while assessing them. In their education, student teachers encounter many different forms of tests and assessments, with different types of requirements. Traditionally, the

dominant mode of assessment has been paper-and-pencil testing of individual students.

Recently, Large-scale assessment programs are increasingly turning to group assessment in which small groups of students collaborate to solve problems or complete projects instead of, or in addition to, students working on tasks individually. In this article, a comparative study is done to inquire the two assessment methods: Individual and collaborative group assessments, in the mathematical context.

Individual Assessments

In the individual assessment procedure, individual performance of a student is evaluated at a time. This is one of the most common assessment methods, which is often practiced by mathematics teachers for a long time. There may be numerous types of assessment strategies that can be utilized for assessment of students such as, written exams, assignments, research papers, projects, portfolios, practical work, articles and case studies etc.

Several pros and cons of using individual assessments in teaching and learning process of mathematics have been emphasized in literature. Few major advantages of individual assessment in mathematics are:

- More attention towards the student: Since the assessment is conducted individually, the teacher can pay more attention towards students. The teacher can easily recognize the ability of students to solve problems using mathematical

concepts and detect the strengths and weaknesses in learning mathematics at individual level. Due to provision of proper attention, the results also come out to be great and it is beneficial for both the student as well as the teacher.

- The teacher can easily encourage the students: In most of individual assessment strategies, teacher gets more time to observe the behavior of students more closely. Further, students can be encouraged, and the right path could be shown to them more effectively.

- Results are independent: Since assessment is done individually, the true work done by the individual is assessed, which is highly helpful in uplifting the mathematical thinking of individuals.

On the other hand, individual assessments are characterized by following disadvantages:

- Time consuming: Since every individual must be considered during the assessment, the process is quite lengthy and time consuming.

- Costs more effort than other assessment procedures: Questioning every individual and knowing the problems of every individual, requires more effort of the teacher.

Collaborative Group Assessments

Group assessment examines the cumulative performance of a group of individuals by a whole group. Assessment of a large group of students at once is known as "Group testing". Group work is a form of cooperative learning. For many years, teachers have been grouping students together to work on assignments in higher education and in the recent years, group work is becoming a more popular assessment method of students in mathematics.

Large-scale assessment programs are increasingly turning to group assessments, allowing groups of students to solve problems or complete a given task collaboratively. Some advantages of using group assessments in mathematics are as follows:

- **Enhance the quality of learning:** Working as a group allows students to clarify and expand their understanding on core concepts in mathematics covered in the course, through peer discussions with peers. As highlighted by the National committee of teachers of mathematics (NCTM, 1989), group work in mathematics education plays an important role by encouraging students toward asking of questions, discussing opinions, listening to peers, prioritize aspects to be learned, criticizing constructively, constituting an atmosphere of mathematical learning.

- **Develop the sense of responsibility:** Since students may feel like they are part of the group and they hardly want to disappoint others. Therefore, motivation of students to effectively contribute to the project.

- **Helps students to develop generic skills:** By working as a team, students are able to develop generic skills such as teamwork, communication, and project management skills, through engaging in group processes, which are valued by many employers who believe employees with a mathematical background are lacking in these generic skills. In addition, students will receive a chance to get rid of individualism and acquire the skills of working with others, while making new friends and overcoming the fear of making mistakes.

- **Can reduce the heavy workload of teachers:** Submission of assignments in groups can significantly reduce the number of assignments to be marked by teachers and is particularly an attractive option for the courses with large class sizes.

Few major limitations of using group assessments in mathematics could be listed as follows:

- **Time-consuming:** Arranging group work projects can be very time-consuming for the teachers, especially to design the right tasks for the group with respect to appropriate span,

difficulty and fairness for all students, while maintaining the balance between academic and social elements involved in the considering group project.

- **Difficult to evaluate:** Evaluation of the contribution of individual students within the group work and individual competence in the group setting, remain difficult.

- **Assess only the outcome not the process:** Teachers often mark the group work solely based on the product, while neglecting the process of the group work, which also is an important element. If the marking is only based on the group product, students will neglect the learning process, resulting one of the main advantages of using group assessments.

Individual vs Collaborative Group Assessments

There are many testing or assessment procedures to monitor or evaluate the performance of individual students working as a group. But still, it is not clear how the performance of a single student working with a group, truly represent the student's individual competence. Individual competence of a student is best evaluated through individual assessments, where individuals work alone without any collaboration from others (traditional individual testing context).

However, in the group assessment, students get the chance to work collaboratively with the group to solve

problems, which may not be solved individually in the absence of the resources in the group. In the context of group assessments, students may often perform better when collaborating with others, due to high availability of cognitive factors and social variables.

On the other hand, students may misuse the resources of a group to solve problems, by copying from other students' without trying to understand it or carrying out the arithmetic operations after another student has obtained the solution to the problem leading to free riding. Negatively functioning groups can sometimes produce worse performance than individuals working alone. Therefore, the performance of the group assessment contexts may overestimate or underestimate the performance of students when compared to individual testing procedures.

A recent study conducted in the Faculty of Applied Sciences, Wayamba University of Sri Lanka, has evaluated performance of a randomly selected group of 3rd year students on individual and group assessments. The study group of students were taught the Box – Jenkins's Approach of modeling time series data through a series of lectures with potential examples and problem solving.

Subsequently, they were given two assessments based on the same approach, one as a group assessment and the other as an individual assessment in the same week to examine how closely do achievement scores from a group collaboration context correspond to scores of students working individually. In the group context,

students can collaborate on all aspects while the individual testing context allowed no collaboration.

The students had been assigned to groups (3 per each group) and have been asked to solve a problem, after collaborating with group members. Teacher had to monitor group functioning, but not to give assistance. All the students have been encouraged to collaborate when solving the problems. Each student has been asked to submit papers showing all their work in solving the problem. As the individual assessment, another problem has been given to the students and they worked individually without having any assistance from other students or from the teacher.

The problem solved by the group and individual assessment have been designed to be as comparable as possible. Then students' written work on each problem from the group and individual testing was marked the scores were compared using the paired -t test.

Results of the paired -t test for the above study based on the performance of students in the group and individual settings, mean performance had remained significantly higher under the group setting than in the individual setting at 1% significance level ($p < 0.01$). The mean performance has been dropped in group to individual settings. Considering the pattern of individual students' performance across the two settings, 63.16% of the students had shown a decrease from the group to individual settings. Only 36.84% of the students have shown an increase from the group to

individual settings. There were no students who scored the same in both settings.

According to this study, students' performance in group collaboration overestimated the ability of majority of students in solving the problems individually. Using the resources of the group only to get the correct answers without focusing on the procedures of solving the problems and copying from other students or imitating the solving procedures used by the other students, could be identified as the major reasons for above observation.

Even though group collaboration overestimated the ability of students, rather than relying upon approaches that provide assessment solely for the purpose of grading and ranking, assessment practices are also needed to integrate with learning activities to support and strengthen the construction of knowledge base of students and to reflect the diversity found in the curriculum and among the learners themselves.

In conclusion, group collaboration may play an important role in future assessment practices. However, it would be better not to utilize the scores of the group assessments to make inferences about the competency of individual students. For this individual assessment are required, which highlights the importance of using a combined approach of individual and group assessments in teaching.

Establishment of Quality Management Systems in Higher Educational Institutes

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Universities and other Higher Educational Institutions (HEIs) are symbolized as apex body of the education in a country. Therefore, it's believed that such systems are perfect and run without any external or internal politics with proper monitoring process. Hence, peoples are vigilant about this hierarchical model and believe thoughts given by the academics and scholars associated with these institutions.

Therefore, as an academics and institutional developers we have responsibilities to make these Universities and Higher Educational Institutes as well establish system under proper monitoring process. Introduction of Quality Management System (QMS) to the Universities and Higher Educational Institutes would be great opportunities to simplify their complex operational attributes exist in their systems.

The term `Quality' has been described in various ways, but one of the most appropriate in the context of vocational education is `fitness for use'. A service (training) that is said to be of high acceptance by its

stakeholders and is fit to be used for its intended purpose; is called a good Quality/service.

If a training program and its supporting services are delivered to the trainee, in a reasonable period and at affordable cost; the knowledge, skills and attitudes required by him/her to engage in his/her chosen occupation are imparted successfully, then the training program is said to be of acceptable Quality. Likewise, if the craftsman who has completed training is fit to be employed in the respective industry in that occupation, the training is said to be of good quality.

Improvement of awareness about quality management system among working community is the key to success. Without proper understanding about any quality management system implementation of such system in an institute is difficult. Therefore, as an initial step need to identify proper quality management system for your institution and make aware your team with awareness meeting. Achieving good quality management system in an institution cannot be realized by one single member in the institute it solves responsibility of the all the members in an institute. Therefore, this article was written with the intention of improving the understanding about importance and components in the Quality Management System (QMS).

An effective Quality Management System (QMS) is a vital pillar for a Universities and Higher Educational Institutes to maintain its registration and accreditation of courses stipulated by the governing body (i.e. UGC, TVEC etc.) to award degree, diploma or certificates.

QMS provides a "Process Approach" instead of final quality of delivered services, according to the basis of ISO 9001:2008 and SLS IWA 2: 2007; "Guidelines for the Application of ISO 9001:2008 in Education".

The other purpose of introducing this requirement is to ensure effective client relations, sound financial planning & control, responsive system operations and reliable record keeping & document management which leads to customer satisfaction. There is no "one best way" to establish and maintain a QMS; therefore, training institutes have their own discretion to develop documents considering the guidelines provided by the recommended hand books. Each training institute is free to develop its own quality system documentation, install the QMS, maintain it through a system of regular internal and external quality audits and carry out continual improvement of its activities.

According to the basis of ISO 9001:2008 and SLS IWA 2: 2007; "Guidelines for the Application of ISO 9001:2008 in Education", QMS which comprise with six vital procedures such as Control of documents, Control of records, Internal Audits and Management Review, Control of non-conformities, Corrective action and Preventive action.

Control of Documents

All documents such as manual, procedures, work instructions, guidelines, forms etc., are to be controlled and documented in the manual, All documents are to be approved for adequacy, Documents are to be reviewed, updated and re-approved as necessary**,** Ensure identification of any changes and current revision status of documents**,** Ensure that the relevant

versions of applicable documents are available at the point of use, Documents must remain legible, written in understandable language and easily identifiable, Ensure that external documents are identified and their distribution controlled and Prevent unintended use of obsolete documents and ensure that obsolete documents are appropriately segregated.

It is recommended that the Quality Management Representative (QMR) shall review and CEO/head of the institution shall approve all QMS documents. A master list of QMS documents is to be prepared and maintained by the QMR. This will facilitate the MR to distribute and ensure proper control of documents. All external documents such as NVQ standards etc. should be appropriately distributed and controlled. Periodic validation of availability of external documents should be done. Documented procedure is to be maintained by the training institute. Under this guidance we can categorize the available document in an institute as original documents, control document and obsolete and we can label them based on different colors for prior recognition. In contrast, we can further divide documents in to three sub categories such as internal document, external document and obsolete document. This segregation may help for easy recognition of the institutional document without prior exposure. It makes complex in to simple mode leading to productivity enhancement in the organization.

Control of Records

There are many records maintained by the institute and most of them could be used for analysis e.g. exam results, student attendance, questionnaire feedback etc. and provide evidence

of conformity to requirements and provide improvements to processes and QMS. Records shall be, Legible, readily identifiable and retrievable, properly stored manually or electronically, Have specific retention period indicated in the Quality Manual/procedure and Have a disposal method. The Quality Management Representative (QMR) should prepare a list of records maintained with regard to the QMS. Documented procedure is to be maintained by the training institute.

For better understanding and easy identification of the different records, records can be categorized into specific groups such as Awareness about QMS, Students' Activities, Academic activities (Assessment / Training / NCS / Curriculum etc.) , Staff (Academic / Non-Academic), Training / Human resource plan / CPD (Academic / Non-Academic), Occupational Safety and Health (OSH) (Environment/ Hazardous / Industrial etc.), MR meeting records, Customer Satisfaction (Student / Parents / Industry), Financial activities.

Some record such as answer scripts need to keep for five years. Therefore, it should be kept properly as special recorders to use whenever necessary. Hence, proper record keeping method is a key to success of an institution as punctual and well organizes. The institutions with proper record keeping process may reflect its carefulness about their properties and organizational behavior.

Internal Audits and Management Review

Internal Audits shall be the main pillar of the successful implementation of the QMS of an institute. The Quality

Management Representative (QMR) acts as the coordinator for internal audits of the QMS in the institution. The QMR shall prepare an annual plan, schedule and conduct the internal audits and inform the outcomes to the administration or management systems the institution.

The institute shall conduct the internal audits at least bi-annually considering the requirements of the matrix (i.e. Six by Nine Activity Matrix). The institute shall concentrate on vital areas as specified to conduct internal audits; however, it is also required to conduct the audit for total areas of QMS matrix at least annually. The QMR shall ensure the impartiality of auditors when selecting persons to conduct internal audits. Internal audit outcomes shall be appropriately documented and brought to the notice of the administration or management of the institute.

In case of any identified deficiencies as an outcome of the audits, the QMR is responsible for clearing of such deficiency reports as agreed with the auditee concerned. The institution shall maintain a written procedure to ensure the effective implementation of internal audits of the institute.

Internal audit should be based on the audit plan, which is properly prepared by the QMR based on his or her previous experience. Through this internal audit series, audit team will be concentrated on their process of control of document and control of record based on the check list. Check list is a document which indicated that which person wants to maintain documents and records in their custody.

As an example, what are the documents and records need to be maintained by assistant registrar, librarian, assistant bursar,

head of department and lecturers etc. Any deviation of maintaining these documents and records according to the guidance given by Establishment Cord, Ministry of Finance or University Grant Commission (UGC) will be rechecking and monitored by the internal audit. As an example, whether the recruitment procedure is performed according to the instruction given by the UGC circular, whether the scrutiny board is appointed, or examinations are performed at right time and students were passed out at correct interval etc.

Therefore, through internal audit we will be able to get an idea about such University or Higher Education Institute work according to the set norms, standard, guidelines by the authority. These deviations are referred as non-conformities or deviations from correct procedure which is implemented by the authority or controlling body. Therefore, internal audit may help to identify deficiencies exist within the given institution.

Control of Non-conformities

The training provider shall comply with the documented procedure to identify deficiencies *not conforming* to the set norms, standards, guidelines and to control the identified non - conforming services. Records should be maintained for the nature of deficiencies and actions taken to correct or eliminate them. The institution shall maintain a written procedure to ensure proper control of deficiencies of the institution.

With the help of internal audit series institution can early recognize the deviation from correct order. Therefore, these deviations are referred as non-conformities. Through the management review meeting administration or governing

body can recognize the prevailing non-conformities as much as easiest way. Then they can look for suitable remedy in short term or long term to overcome. This process would like a purification process of an organization, which identify what need, what should remove and what should change etc.

Corrective Action

The training provider shall comply the documented procedure for implementing the corrections of deviations. Actions should be taken to minimize the cause of deviations. The institution shall maintain a written procedure to ensure deviation corrections of the institution. Corrective action is an immediate process to overcome existing non-conformity. As an example, if there is a delay in performing disciplinary committee for inquires examination violation in previous semester, as a corrective action institute can complete this inquiry within one-week time. Rather than repeating same problem for long time, we can give short term remedy through corrective action to maintain peaceful environment within the educational institute.

Preventive Action

The institute shall determine actions to eliminate potential deviations or deficiencies that could happen in the future in order to prevent their occurrence. The following steps are to be taken when eliminating potential improvements customer satisfaction outcomes**,** other stake holder feedback with satisfaction**,** enhanced quality policy, objectives and commitment for quality. The institution shall maintain a written procedure to ensure the proposed improvements are materialized to control deficiencies of processes of the

institution. Corrections and improvements of actions are to be discussed and reported at the management review meetings.

As an example, if there is a delay in performing disciplinary committee for inquires examination violation in previous semester, as a preventive action institute can get decision to complete inquiry within one month of time from the violation of examination rules and regulations. Rather than repeating same problem for long time, we can give concrete decision through preventive action to maintain peaceful environment within the educational institute.

In this context, six vital procedures as per the ISO standards as mentioned above and nine activities as mentioned bellow are required to be implemented in order to satisfy the requirements for establishment of a QMS. By considering these two aspects the `SIX by NINE' matrix was developed in order to achieve the proper quality management systems. Therefore, the `SIX by NINE' matrix is a process approach mechanism as far as the Quality Management System is concerned.

In developing the simplified version of QMS, the following nine vital activities that an education institute shall comply have been taken into consideration.

- Academic staff concerns – all actions related to teaching staff shall control with necessary documents including a comprehensive check list by including lecturer selection criteria (SOR), induction, performance evaluation and continuous performances development (CPD) etc.

- Training equipment maintenance/material purchase – all actions related to equipment maintenance and purchasing of materials shall be controlled with adequate documents including a check list such as Consumables, teaching aids, list of items, service agreements, safety & health equipment and supplier list.
- Environment/infrastructure maintenance - all actions related to environment/ infrastructure such as fire fighting equipment, water, sanitation, ventilation, enough light, necessary safety aspects, class rooms, labs, library and common amenities shall be controlled with adequate documents including a check list.
- Training materials - all actions related to National Competency Standards/curriculum and other training materials (current version) shall be controlled with adequate documents.
- Final and continuous assessments - all actions related to final and continuous assessments shall be controlled with adequate documents including time table for assessments, question papers, assessment materials, and consumables for practical, appropriate place for assessment, model papers and model answers.
- Training delivery process - all actions related to training delivery shall be controlled with adequate documents including training plan, time table, lesson plan, attendance, registries and teacher feedback.
- Student enrolment - all actions related to selection criteria, screening applications, interviews and selection test and data in the database shall be

controlled with adequate documents including a check list.

- Customer satisfaction – all actions related to students, parents, and employers' satisfaction shall be controlled with adequate documents including a check list.
- Financial reviews – all actions related financial stability of the institute such as costing including breakeven, balance sheet and per head cost of student shall be controlled with adequate documents.

Quality management system (QMS) is a continuous process that helps to maintain documents and record of an institution without any buyers. Therefore, need a help of centralized person as Quality Management Representative (QMR). Top Management and the MR have to provide supportive evidence of their commitment to maintain and implement the established QMS and continually improve its effectiveness by ensuring that the institute meets the Customer, statutory and regulatory requirements, Working towards the Quality Policy and objectives, Effectively conducting and participating in Management Review meetings, Effectively conducting periodic internal audits**,** Management shall support and appreciate commitment of MR and other personnel involved in the implementation of QMS and MR shall be appropriately recognized by the institute.

The organization shall formally appoint a Management Representative (MR) who could effectively implement the QMS in the institute, irrespective of his/her own duties and share the responsibility to establish, implement, review and maintain the QMS in the institute. The MR shall report performance of the QMS and the need for any improvements,

through internal audits and the Management Review meetings to top management.

Management should hold review meetings to discuss the outcomes of internal audits on QMS on a regular basis at planned intervals, to ensure the continuing suitability, adequacy and effectiveness of the QMS. Management should review opportunities for improvements and any need for changes to the QMS, Quality Policy and Quality Objectives. The following topics shall be discussed at the review meetings such as Results of internal audits, Customer feedback and satisfaction, Status of improvements and corrections taken, follow up actions from previous meetings (minutes) and Changes that could affect QMS.

All employees of the institution should be given basic knowledge of Quality Policy, objectives and QMS documentation. The awareness programs could be conducted using competent resource personnel either internal or external. The staff could develop appropriate documentation on their own. In this context the MR could develop the six procedures while the Quality Manual could be developed with the support of other members of the staff including head of the institution.

Attention of Undergraduates During a Lecture: An Empirical Analysis

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Background

As the statement, "No country can really develop unless its citizens are educated" given by Hon. Nelson Mandela, the citizens of a country should be educated in order to develop the country. Education plays a major role in life and the culture of a country. In this context, Sri Lanka has also taken an appreciable step to provide free education after getting the freedom. The constitution of Sri Lanka provides free education for Sri Lankan students as a fundamental right. The structure of education system in Sri Lanka is mainly divided into five, as primary education, junior secondary education, senior secondary education, collegiate education and tertiary education.

In Sri Lanka, there are 15 state universities, which provide tertiary education under the direct administration of the University Grants Commission that controls funding and operation of university system in the country. Apart from the state universities controlled by the University Grants Commission, there are several other universities administrated directly by several government ministries, degree awarding

institutions and professional institutions presently running as higher educational institutes in Sri Lanka. As the undergraduate education in state universities is totally free, the university entrance remains extremely competitive. The students are selected to the universities based on ranked order based on their average z-score values obtained at the G.C.E A/L Examination while respecting district base representation. High ranking students from any area of the country get the chance of having tertiary education.

The courses are taught to the students using various teaching methods. But lecturing is used as the major teaching method in Sri Lankan universities. Lecturing is not simply a matter of standing in front of the students and sharing what the lecturer knows. It is vital to conduct the lectures in such a way that motivates, instigates and inspires the students for creative thinking. Therefore, lecturers should make sure that the students are properly concentrating and understanding what they teach.

Students coming from different socio-economic and cultural backgrounds often have different mind sets and concentration and attitudes of them maintained in learning may differ significantly. Some of the students do not attend the lectures regularly. Most of the students think that they do not need to concentrate on the subject areas during the lectures. They believe that it is possible to learn necessary sections of the subject area and prepare for the examination at the end of the semester. But the lecturers' responsibility is to prepare the students for achieving the learning outcomes of the

courses, by utilizing effective learning methods and strategies, and assessment methods. Therefore, it is important for the students to pay attention and concentrate during the lectures, because it enhances their competency to memorize the content for a longer period, while broadening the understanding on subject related concepts.

If the students do not pay attention during the lectures, they may involve themselves in other activities such as private conversations, dropping pens or pencils, excessive movement of body parts and passing notes to others. According to Lamba *et al.* (2014), duration of the lectures, methods of teaching, novelty or repetitive nature of the topic, surrounding environment, individual interest, health and emotional status have been identified as the major factors, which can affect the attention and concentration levels of students in the classroom.

Some psychologists claim that the attention span of a typical student may range from 10 to 15 minutes. It is natural for student attention levels to vary according to motivation, mood, subject areas, perceived relevance of the material, and other factors. Sousa, (1998) stated that the peak period for learning within the concept of class activity is the first 10 minutes and as such lecturers are encouraged to use the above time slot for teaching new concepts. Hence, lectures should be delivered within a short life span in order to maintain an acceptable attention level in students. It is equally important to note that, this not only deals with the attention span of students, but also with the overall teaching performance

of the lecturer. For example, a lecturer who teaches 6 to 9 hours in a day may not perform excellently across all the lectures and the same remains applicable for the students, who may have to attend 6 to 9 hours of lectures in a day.

Giving breaks or intervals is an effective method to allow the level of attention to recover. Their efficiency can be enhanced by adding mentally stimulating activity. The simplest form of break is provision of few minutes for students just to relax and have a bit of quiet time or to chat with their classmates.

Methodology

To assess the students' attention level during the lectures, a questionnaire survey was carried out amongst 120 undergraduate students of Physical Science stream in Sri Lanka. There were four batches and 30 students from each batch, responded the questionnaires. The designed questionnaire is shown in Table 1 and Table 2.

Table 1: The attention level of the students during a 1-hour lecture without any break

Time (min)	Attention Level (%)										
	It is very interesting. Clearly understand.		***It is interesting. Understanding level is good.***		***Fairly understand***		***Feel boring***		***Feel sleepy***		
	100	***90***	***80***	***70***	***60***	***50***	***40***	***30***	***20***	***10***	***0***
0 – 10											
11 – 20											
21 – 30											
31 – 40											
41 – 50											
51 – 60											

Table 2: The attention level of the students during a 1 hour lecture, if a break is given at 30 minutes

Time (min)	Attention Level (%)										
	It is very interesting. Clearly understand.		***It is interesting. Understanding level is good.***		***Fairly understand.***		***Feel boring.***		***Feel sleepy.***		
	100	***90***	***80***	***70***	***60***	***50***	***40***	***30***	***20***	***10***	***0***
31 – 40											
41 – 50											
51 – 60											

Results & Discussion

The temporal variation of the attention level of students at intervals of 10 minutes in a 1-hour lecture without any breaks is shown in Figures 1 - 6.

As depicted by the Figure 1 and 2, the attention level of students remains high in the first 0-20 minutes, whereby more than 80% of the students have felt interested in the lectures. After 20 minutes, the students' attention level has started to decrease and it's noteworthy that only 27% of the students have maintained their attention level at 'interested level' till the end of the lecture. It is identified that provision of a short break after first 30 minutes, would be beneficial to maintain a higher attention level of students.

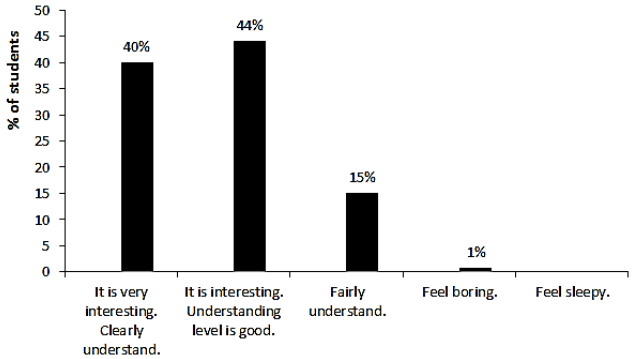

Figure 1: Students attention level in 0-10 minutes

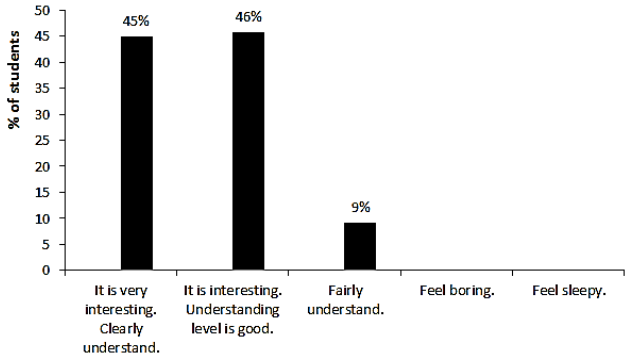

Figure 2: Students attention level in 10-20 minutes

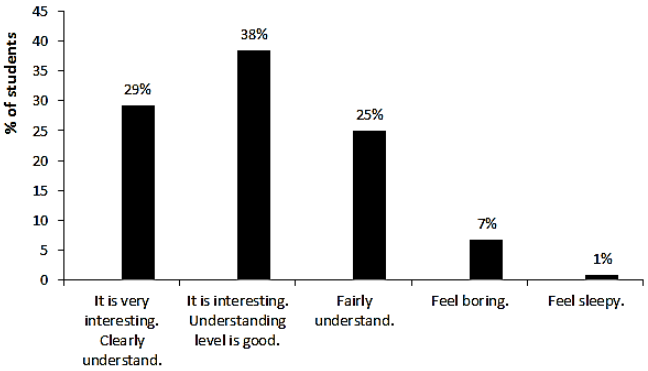

Figure 3: Students attention level in 20-30 minutes

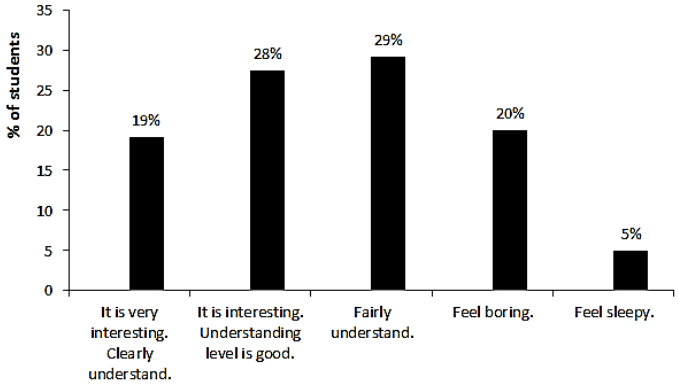

Figure 4: Students attention level in 30-40 minutes

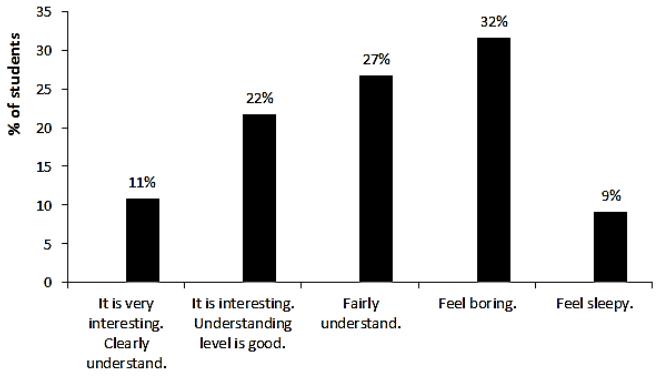

Figure 5: Students attention level in 40-50 minutes

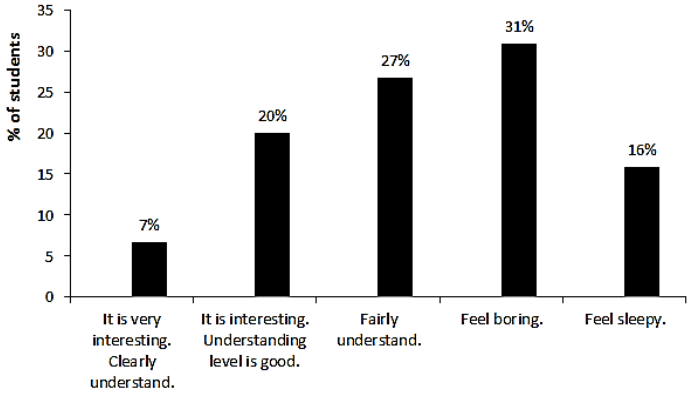

Figure 6: Students attention level in 50-60 minutes

Temporal dynamics in the attention levels of the students during 1-hour lectures without any breaks is shown in Figure 7.

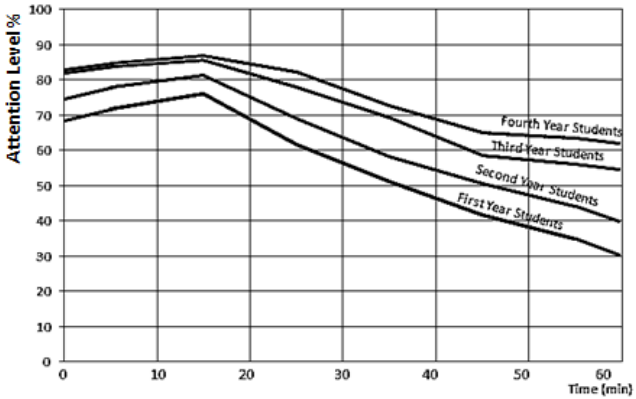

Figure 7: Attention level of the students during a 1-hour lecture

The attention level of the first-year students decreases by 30% between 15 minutes and 45 minutes. It approximately dropped up to 30% at the end of the lectures (60 minutes).

A notable decrement of 30% in the second-year students' attention level was observed between 15 and 45 minutes. It dropped down to nearly 40% at the end of the lectures.

It was found that the third-year students' attention level decreased by 25% between 15 and 45 minutes, which eventually dropped down to nearly 55% at the end of the lecture. There was a decrement of 20% in the fourth-year students' attention level between 15 - 45 minutes, while the least attention level was reported as 60% at the end of the lectures.

It was evident that the attention level of students during lectures increased with the level (maturity) of the students (Figure 7). Generally, the students attempt to understand the basic theories of a subject in their first year, while majority of them face difficulties in English language. Most of the students study up to Advanced Level in their native languages. When they enter the universities for their tertiary education, they face difficulties in conducting their studies in the English medium as mandated by the university regulations.

Especially, the students who enter the universities from rural areas have poor communication skills in terms of English, which could be the main reason for their poor attention level during the lectures in the first year. In

the proceeding years, students develop their knowledge and skills on English, and improve their analytical and design skills, especially in their third year allowing them to understand and critically analyze the contents delivered through lectures. In fourth year, level, the students improve their creativity and begin to link the subject content with the practical applications, which retains more attention on the subject. Overall, the attention level of the students during a 1-hour lecture is shown in Figure 8.

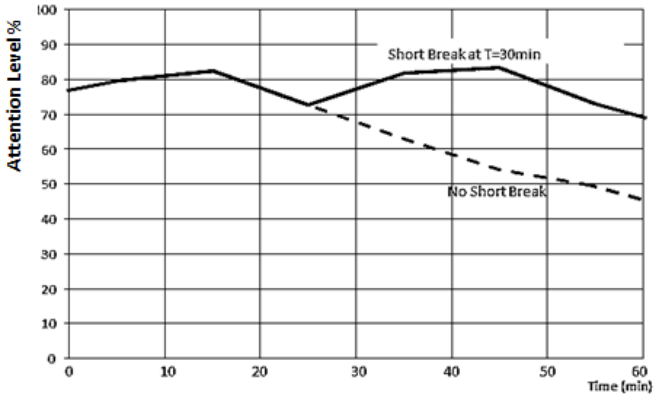

Figure 8: Attention level of all students during a 1-hour lectures

It was evident that a 30% drop of attention level could be expected among the students if no lecture break was given, while the least attention level of 45% was reported at the end of the lecture. On the other hand, Figure 8 shows that provision of a short break would improve the attention level of students and maintain it within the range of 70% and 85%.

In addition to provision of short lecture breaks, a variety of other tools could be used to improve the attention level of students in lectures. The students can be divided into several groups to solve a problem or raise a question during the lectures. Lectures can be started with an interesting story or a personal anecdote. The lecturer can use real-life examples that are relevant to the subject field and relate those to students' experiences. An open-ended question can be asked to the students to promote brainstorming. Ideas of students can be written on the board and students can be allowed to provide the major conclusions. It is also advisable for the junior lecturers to get some more ideas from well-experienced senior academic staff members in order to improve the attention level of the students during the lectures.

Assessing the Students Level of Attention in a Two-Hour Lecture

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The education is process of facilitating learning, and it is a smooth and challenging function. Good teaching, while facilitating learning, will promote learning, when considering high education, it can be said as process of giving systematic instruction to the learner. If we discuss '*Systematic instruction*', the "lectures" are playing a wide role. Because of that, in universities and higher educational institutes 'lecture' has been used as a main delivery method, even though the way it sounds itself gives a boring sense. It can be effective only if the student participation involves without, distraction and being bored.

In that case; the 'lecturer' comes first. To be a good lecturer means, to be able to use the communication skills effectively. In making communication effective a lecturer must use various types of motivative methods in his/her lecture. The secret behind a lecture which is rich in student participation with their own motivation is the strategies, which are being used by the lecturer, to facilitate the teaching learning process. To get the maximum use of them, the lecturer should know how to select the most appropriate one to teach and how to use the selected techniques at appropriate instances.

To begin with all of this, it is important for the students to pay attention and concentrate because it enhances their competency and skill to memorize the content for a longer period as; "attention" helps a person in gaining knowledge. There are two main factors that can affect attention and concentration of students such as; *duration* and *method of teaching*.

Under the fact, 'methods of teaching' we can draw our attention through various tricks such as; novelty and preparation of topics (because it helps the students to remind that this is what we are learning about and it will work as a 'reminder' and it will help the lecturer to maintain the attention of the students), surrounding environment (because if the lecturer can create a topic related background within the classroom using some realias, visuals or at least a multimedia presentation with related images or concepts, it will directly affect the brain storming' part of the student), interest (because students always pay their attentions more on jokes, gossips or tales).

The lecturer can get the chance of it and enchant their minds through, created jokes, tales etc., related to the topic. Then the students will by heart them and without even paying a single attention they will recall the lessons with the use of them. At the same time it will be interesting, make them happy and refresh during the session), health and emotional status (because it is very hard for students to participate in lengthy class, if they are unhealthy and emotionally down. Therefore, by paying many roles such as; a pleasant speaker with good

miming, facial expressions, gestures etc., the lecturer can get the attention of above students too).

To maintain the "*attention*" the most important fact that must be considered is; the "*duration*" of the lecture. Most of the time lectures are lengthy classes and the way how to use learning activities to make the class enjoyable was discussed above. Now that the fact which must be mainly focused comes up and that is to give "*short breaks*". The lecturer has full freedom to decide the time period and the number of short breaks to include and he/she must be smart enough to gets the students stay within the lesson even during that short break by drawing their attention unknowingly. (For example; the lecturer can ask two or three questions from the audience just before the short break and suddenly stops for a break and says 'let's discuss the answers after the breaks.

Then, even during their very short break they will try to answer the questions by thinking individually or discuss those matters and try to find answers in pairs or groups and they will unknowingly involve in the subject matter even during their short break). This gives a hint of how lecturers can trick the students in the name of breaks for their own benefits. That will supply a worm supportive atmosphere full of life again and again in the lecture.

This shows that, to achieve full attention and concentration of the students; lengthy classes should be supplied with effective learning activities to make the

class enjoyable and must have included short breaks to reduce tiresome and maintain the flow.

The Relationship between Student Performances and Lecture Duration for Two Hours Lecture Sessions

A typical (average) student attention is increased first 10 – 12 minutes, then, it declines over the course of the class. However, at the last couple of minutes, the attention is increased towards the end. The student attention of entire duration of the lecture session (two hours session) is shown in figure 1. In this graph, Y-axis and X-axis are represented student performance and lecture duration respectively. Furthermore, it is called as "Learning curve in lecture".

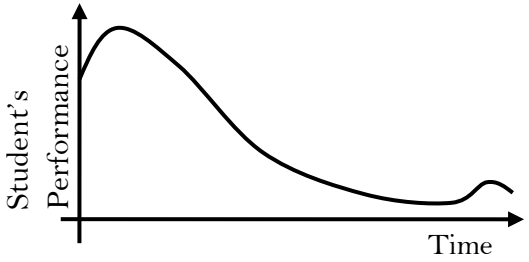

Figure 1: Graph of student's performance (attention) vs. duration of the lecture, learning

As we discuss before, the student attention under the decline region can be improved using short brakes. After the short break, the student attention will be increased within couple of minutes, but it does not maintain throughout the rest of the lecture. Again, it

follows decline behavior. To overcome this in-efficiency (less attention / less performance) of the students, several short breaks can be used. Furthermore, it is not only a small break but also it will be some small activities, mentioned in previous chapters. The new pattern of the learning curve with short breaks (rest)/changing activity is shown in figure 2. It shows that, *how the student's performances (attention) vary* with three short breaks

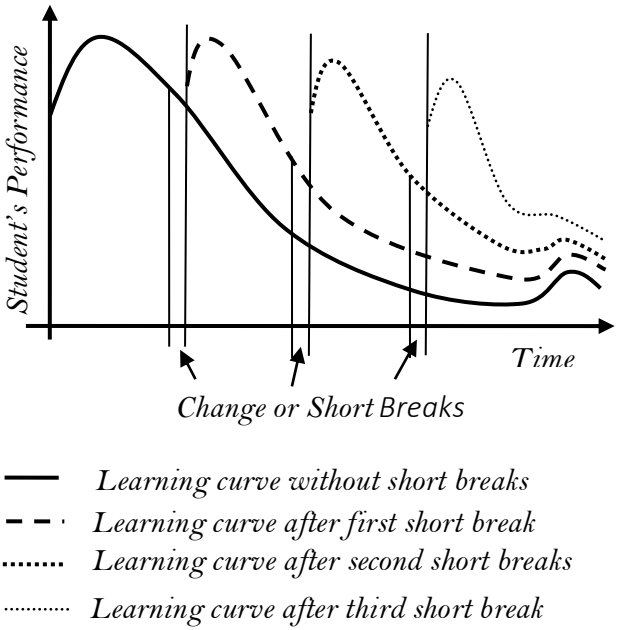

Figure 2: Graph of student's performance (attention) vs. duration of the lecture with short breaks, learning curve in lecture

Compatibility Study of Student's Attention (Student Performance) vs. Lecture Duration among Science and Technology Stream Students

I have verified the compatibility of above discussed learning curve (student performance vs. duration of the lecture) among Science and Technology students. For this verification process, I have prepared a questionnaire and distributed among 30 Science and Technology students. This questionnaire is designed to gather the student feelings among the lecture duration. Using this questionnaire, I checked the students' feeling during the lecture sessions under five categories, such as; *I have good attention (topic are very clear and can understand well), I have attention but feeling boring, feeling boring, I don't like to write anything and finally, feeling sleepy.* Furthermore, the whole time period was divided into equal time slots of 20 minutes and students' feelings were analyzed under those time slots. The analyzed results are shown in figure 3 and 4.

To conclude with all of this, the student's attention (performance) can be increased by giving some activities or short breaks to the students. It is good to give after every 20 – 30 minutes throughout the lecture. For two hours lecture session, it should be at least 3 times.

When we discuss Science and Technology students, they have more practical oriented activates. So, it will be used as an advantage for maintaining high level of students' attention. For that, the lecturer/teacher can show small related video or simulation to the students. And also, lecturer can gives small exercises related to

the discussed subject point. Furthermore, it will be an added advantage to the students; because it will provide good support for understanding of subject point easily.

When teach mathematics related theories of mathematics subjects, the lecturer can give mathematical exercises to the students and ask them to solve within break time. Even, it is a good way to utilize short break effectively. In addition to that, most of the learning topics have diagram-based learning points, so it can be used as a changing activity for the students. For example; lecturer can give half-competed diagrams or un-named diagrams to the students and ask them to construct the diagram together.

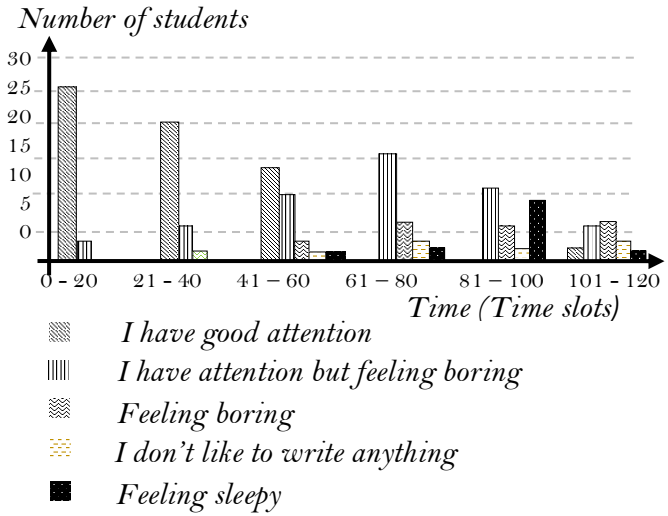

Figure 3: Analyzed data of questionnaire

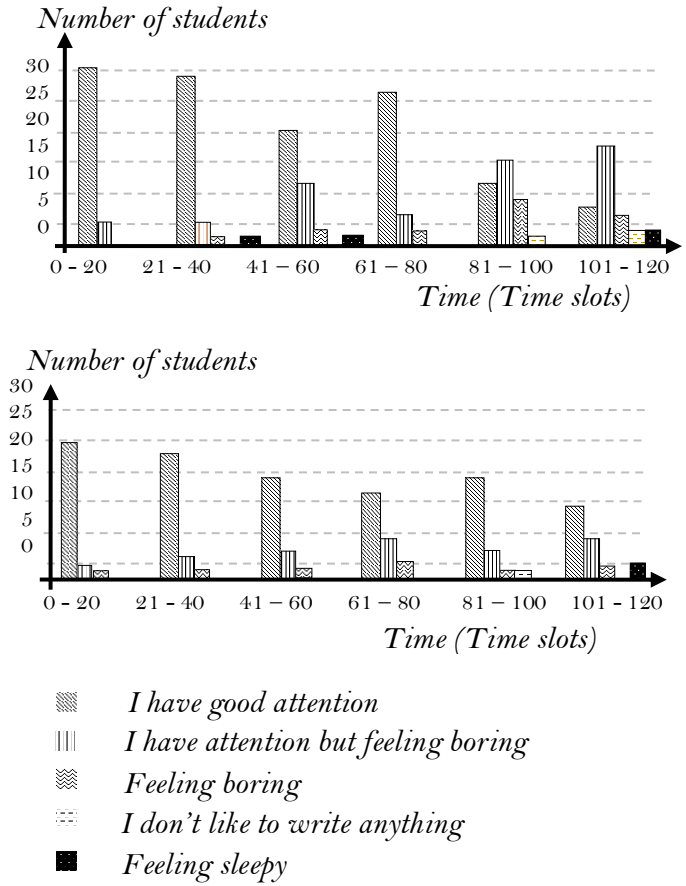

Figure 4: Analyzed data of questionnaire