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A Theoretical Foundation to Foster the University Education System in Sri Lanka: A Pragmatic Approach to Evacuate the Age-Old Gap

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Abstract

Despite the fact that one pivotal role of the university education system in Sri Lanka is to fabricate proficient graduates as per the expectations by both private and public sector organizations meeting their competent criteria, we experience a situation of large number of graduates bear with unemployment. The recruiting issue of unemployment, underemployment and a variety of precaution taken by different authorities to resolve this crisis indicates that the current university system has not been able to cater to the needs of the society to a greater extent. Thus, the study focuses to formulate a mechanism to minimise the above crisis by suggesting a framework to reform the curriculum design. The objective of this study is to propose a theoretical framework for the university education where the expected knowledge, skills, and attitudes can be acquired by constructively aligning of the curriculum; learning outcomes, teaching learning activities and assessment addressing to three domains of learning; cognitive, affective and psychomotor. In each domain, the curriculum is designed assigning lower levels of taxonomy in the preliminary years of the degree program and progressively directing to higher levels of the taxonomy at the higher levels of the degree program. Also within each level, objectives of learning, teaching methods, learning and assessment methods are constructively aligned. In conclusion, adoption of this theoretical framework to design the curriculum will be a milestone in the university system in Sri Lanka to evacuate the age-old gap and meet the industrial demand successfully.

Key words: Unemployment, Curriculum, Constructive Alignment, Taxonomy, Domains

Introduction

For most of the nineteenth and the twentieth centuries, the curriculum was regarded as a static, fixed entity, even though it was probably slowly changing all the time (D'Hainaut and Lawton, 1981). Although currently, it is generally accepted that the revision of educational context is an important aspect of any attempt to bring improvement in education (Ochs, 1981). At present, these two philosophies can be seen in the university system in Sri Lanka as a whole or part of the whole system (practices of a certain faculty or department within a whole system). In one extreme, few sections of the university system, departments or faculties are not urged to change their existing educational system. On the other extreme, there are historical evidences that many universities have initiated and modified their educational system in different periods in the past. Emphasising on the latter view, university academics reform existing curricula into new curricula based on highlighted criticisms. But up to date, these attempts have not been very thriving in the field of higher education. According to Ochs in 1981, a number of reforms today employ a complex methodology and are the outcome of a long period of study and preparation. They have led to extensive consultation and concern in the educational system as a whole. Such reforms put the results of educational research into practice and are aimed at bringing continual improvement to develop the existing educational system. Yet, all in all, very few countries have taken into account the various factors which are influencing and changing education in modern world and which have led to a radical thinking of its aims and forms (Ochs, 1981). Different educational specialists in the educational field, based on their universal experiences, had introduced different reforms to the university education system in Sri Lanka in the past. However consistent with the current tendency of the university educational system in Sri Lanka, it creates graduates who are not fitting to the corresponding demands of private sector and public sector employments. Therefore this paper is aimed to develop an appropriate conceptual framework for the university educational reform in Sri Lanka.

Problem of the Study

Recently over 40,000 graduates who were in different educational fields shifted and selected occupations in the public sector as their career path. However, this shift of selecting to public sector jobs was not as glad to them as these graduates were suffering from many employment problems in their workplaces. Giving the ideas of Karunarathne as below these issues can be elucidated:

> Imagine, then, that, in the same country, there are scores of young graduates desperately seeking remunerative opportunities, which they find hard to come by. For a graduate to be able to secure a job opportunity in his/her respective fieled of studies is like being to find water in the Sahara. Consequently, of course, the rate of graduate unemployment in the country runs significantly high. The well versed in rational theory may ask how this anomaly is possible? They may ask Keynesian conditions fail to prevail? They may ask why demand for labour has not been stimulated by the growth in the price of goods and services? In their attempt to clarify the prevailing situation, some, form various marginal groups of society, venture to suggest that the graduates of Sri Lanka are irrational in their conduct and/or are downright lazy (Karunaratne, 26. 05. 2005, Daily Mirror)

This view can be explicated by presenting ideas of Kumaradasa,

> Unemployment among university graduates, especially among the arts graduates of Sri Lanka has been persistent in the economy during the past three decades, with many ad hoc measures been taken from time to time to solve this problem. In 1970s a graduate employment scheme was established and crash programmes were created to recruit graduates to various government departments. A salary or rather an allowance that did not commensurate with their educational qualifications was paid to these graduates. These actions have contributed to aggravate the frustration among the graduates.
> (Kumaradasa, Executive Director, Wide Trust of Sri Lanka, 1996)

According to Kumaradasa in 1996, there are basically four major reasons of unemployment and underemployment among graduates. These four reasons are graduates, attitudes of employers, education system, and lack of professionally oriented curricula in the universities (Kumaradasa, 1996). He further elaborates above four reasons of underemployment and unemployment among graduates as follows;

- Graduates:

Lack of assertiveness, lack of knowledge about the world or work, lack of motivation, narrow outlook and notes based knowledge, low profits & undeveloped personalities, unrealistic job aspirations, lack of entrepreneurship and leadership qualities.

- Attitudes of employers:

Employ graduates at non-graduate positions, favour young O/L, and A/L candidates for graduates, and culture bias against employment of woman in responsible jobs.

- Educational system:

Not outward looking for technological progress, geared to generate repetitive subject knowledge, lack of science & technical education, not oriented for the total development of the students, liberal arts education of colonial heritage, methodology not geared to develop wisdom and independent thinking among students.

- Lack of professionally oriented curricula in the universities:

Lack of facilities for extracurricular activities or the students, nor generating new knowledge that can be offered to the industry, lack of interaction with employers, and dependence of education solely on lecture method.
(Kumaradasa, 1996)

According to Lakshman Jayatillake, Chairman, National Educational Commission in 1996, above phenomenon has been clarified further.

> Private sector employers are free to select and reward their employees to suit an organization's specific requirements. One idea that has currency is that the private sector prefers Ordinary Level and Advance Level qualified persons who are fluent in English, rather than graduates. The often repeated complaint against the graduate is that:
>
> a. His English competence is poor, especially in speaking:
> b. His age at the time of recruitment is in the upper twenties.
>
> The other complaints against graduates seem to be vocalisations of the employer's own complexes and biases. While they cannot be directly useful in the designing of curricula and cannot be qualified, these ideas have some degree of relevance (Jayatillake, 1996)

According to facts given by Sri Lankan folks who were in the field of education, university output (graduates) face an immense problem of finding a fitting employment in the competitive labour market. Higher education should train a person to be a self-learner whenever the need for the acquisition of new knowledge and skills arise. His self confidence should be fabricated to the extent that he face unexpected problems with

courage, take the challenge of tackling them and eventually solve them (Epasinghe, 1996). So it is clear that according to Ochs in 1981, Kumaradasa in 1996, and Jayatillake in 1996, curricula of the university plays a critical role to craft and mould an appropriate graduate who has essential competencies to meet the demands of the private and the public sector organizational requirements in the ever changing dynamic environmental context.

When the curriculum development is concerned, the common attitude towards the curriculum is on an uncritical acceptance. It was taken for granted that knowledge is the key to be taught because it had always been taught. Open discussions about changing the curriculum have been comparatively rare until recent times (D'Hainaut and Lawton, 1981). As a whole, the researchers found that major reason for the failure of graduates in the labour market is the inappropriate curriculum of the university system. So the purpose of this paper is to develop a theoretical framework for the university educational system to cater to the industrial demands successfully.

Speculative Backdrop

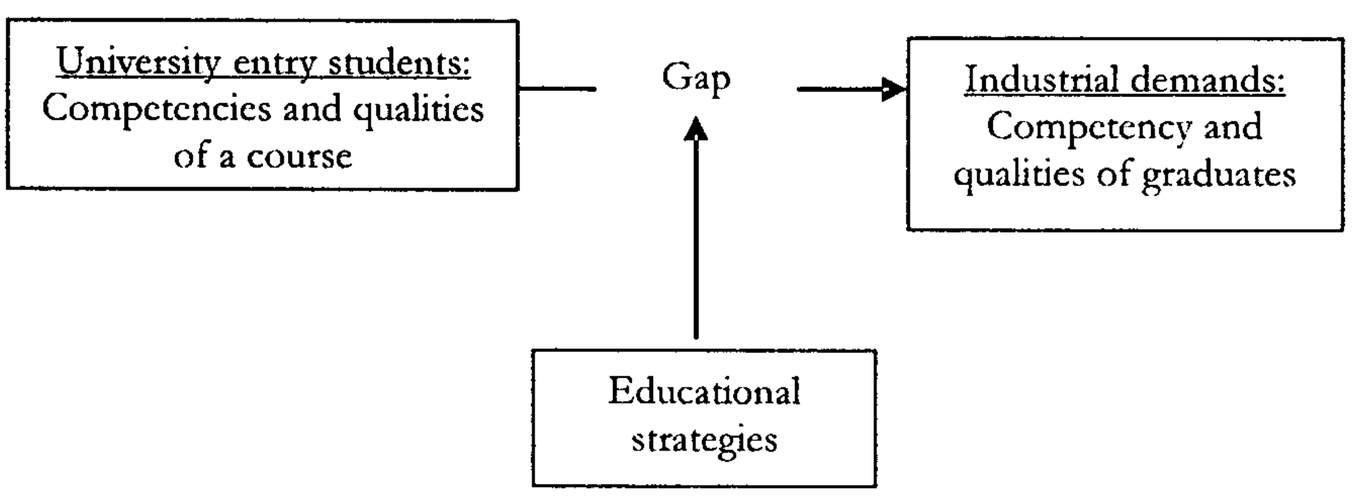
Traditional curricula are taken for granted in two respects: the worth of the curriculum content is not questioned, nor is the efficiency of the teaching method (D'Hainaut and Lawton, 1981). However today the curriculum development is vital and its role is changed as a significant tool of developing educational system. According to Newble and Cannon in 1995, the key to curriculum planning is to forge educationally sound and logical links between planned intentions, course content, teaching and learning methods, and the assessment of student learning while taking full account of student characteristics. So on Newble and Cannon definition of curriculum, the key components of curriculum are objective of course, learning outcomes of course, teaching methodology, learning methodology and assessment methodology. These components can be seen in the university curriculum in the Sri Lankan context. However, interrelationships between these components of curriculum are remained very poor, because academics do not have a proper idea on how to link these components in a holistic perspective. Many academicians who are in the higher education system consider that revision of course outlines delivery of lecturers and assessment on annual basis is essential in the academic scenario in the higher education system. Without knowing, they ignore the holistic view of the university education system and focus only on the input and output of the university system. Especially do not correspondence the educational system of universities to the demands of the labour market. Based on the educational objectives and the demands of the labour market, the university educational system should stand on a

curriculum that facilitate to meet the objectives and specific learning outcomes driven by the teaching and learning methodology and assessment incorporated with three learning domains; cognitive domain, affective domain, and psychomotor domain.

Theoretical Framework

According to educational theories, the curriculum of a university system should be on a holistic approach, not only limiting to university inner system; it should be opened up to the wider society/community. Then, input of university system is A/L qualified students and the out put of university system, is graduates, who are dexterous to engage and occupy in the industrial world. Then academics should be aware of the qualities of students who enter into the university system. In essence, our A/L system supports to create competitiveness among students and usually it offers only few qualities within A/L students. If the university education system centred towards producing a graduate embedded only with the knowledge, it is ridiculous. However, it is the frequent rehearsal in the Sri Lankan context. On the other hand, an academic planner in the wider society has to analyse the diverse requirements claimed by the industry from graduates. So far, there have not been systematic investigations carried out to search the industry demands on graduates. Without considering these two extremes, educational experts cannot do this job successfully. If education people identify the gap between these two extremes, it will be a turning point to initiate educational strategies to the whole higher educational system to bridge this age-old gap as depicted by Figure 01.

Figure No 01: Educational gap of A/L qualified students and university graduates



Educational strategies

Educational strategy is a set of activities, which is built and maintained in an appropriate educational system with a holistic view to meet the educational objectives. Curriculum is the major component of an educational system. A curriculum is an educational project defining a) the aims, goals and objectives of an educational action; b) the ways, means,

and activities employed to achieve these goals; c) the methods and instruments required to evaluate the success of the action (D'Hainaut, 1981). Then, the curriculum objective is to be on wider sense and long - term. It should be focused to reduce the educational gap between university entry students and university output, graduates. Based on the curriculum, university develops instructional objectives. Those are intended outcomes of an instruction that has been stated in general terms to encompass a set of specific learning outcomes (Gronlund, 1981). According to instructional curriculum should be in terms of the

1) Principles of
   a. selection,
   b. organization and
   c. combination of subject (at the macro - level and of course contents of different courses in a subject at the micro level) which depend on
2) their functional value which, in turn, is depended upon fulfilling
3) the needs of
   a. relevance (to the learners and the society),
   b. factors of scope, sequences, integration and repetition (relating to the contexts and the subjects operating along two dimensions - vertically within a subject and horizontally between subjects)
   c. surrender value for further self directed development and
   d. clear explication (with no scope for misinterpretation as to what the educational experience are contemplated and how they are to be administered and qualitatively evaluated) (Sudarsanam, 1979).

According to above explanations, the instructional objective should be based on holistic view. Despite to this approach, learning domains and constructive alignment should be considered to develop an instructional objective and university system.

Learning domains

One extremely useful guide for developing comprehensive list of instructional objectives is the taxonomy of educational objectives. This is a detailed classification of objectives that is similar in form to the classification system for planning and animals. It first divides objectives into three major areas: 1) the cognitive domain, which is concerned with knowledge outcomes and intellectual abilities and skills; 2) the affective domain, which is concerned with attitudes, interest, appreciation, and mode of adjustment; and 3) the psychomotor domain, which is concerned with motor skills (Gronlund, 1981). The major sub categories of learning domains are given in table 01, 02 and 03.

Table 01: Major subcategories of the cognitive domain

Knowledge	Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, form specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain. • Knows common terms • Knows specific facts • Knows methods and procedures • Knows basic concepts • Knows principles
Comprehension	Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material form one form to another (word of numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding. • Understands facts and figures • Interprets verbal material • Interprets charts and graphs • Translate verbal materials to mathematical formulation • Estimates consequences implied in data • Justifies methods and procedures
Application	Application refers to the ability to use learned material in new and concrete situation. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than under comprehension. • Applies principles to new situation • Applies theories to practical situation • Solve mathematical problem • Construct charts and graphs • Demonstrate correct usage of a procedure
	Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may include the identification of the parts, analyse of the relationship between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the

	content and the structural form of the material. • Recognizes unstated assumptions • Recognizes logical facilities in reasoning • Distinguishes between facts and inferences • Evaluates the relevancy of data • Analysis the organizational structure of a work
Synthesis	Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal) or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviours, with major emphasis on the formulation of new pattern of structures. • Writes a well - organized theme • Gives a well - organized speech • Writes a creative short story • Proposes a plan for an experiment • Integrates learning from different areas into a plan for solving a problem • Formulates a new scheme for classifying objects or events or ideas
Evaluation	Evaluation is concerned with the ability to justify the value of material (statement, novel, poem, research report) for a given purpose. The judgements are to be based on defined criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the students may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus value judgment based on clearly defined criteria. • Judges the consistency of written material • Judges the adequate with which conclusions are supported by data • Judges the value of a work by use of internal criteria • Judges the value of a work by use of external standards

Source: Gronlund, Norman. (1981). Measurement and evaluation in teaching.

Table 02: Major subcategories of the psychomotor domain

Perception	The first level is concerned with the use of the sense organs to obtain cues that guide motor activity. This category ranges from sensory stimulation (awareness of a stimulus), through cue selection cue selection (selecting task relevant cues), to translation (relating cue perception to action in a performance). • Recognizes malfunction by sound of machine • Relates taste of food need for seasoning • Relate music to a particular dance step
Set	Set refers to readiness to take a particular type of action. This category includes mental set (mental readiness to act), physical set (physical readiness to act), and emotional set (wiliness to act). Perception of cues serves as an important perquisite for this level. • Knows sequences of steps in varnishing wood • Demonstrates proper bodily stance for batting a ball • Shows desire to type efficiently
Guided response	Guided response is concerned with the early stages in learning a complex skill. It includes imitation (repeating an act demonstrated by the instructor) and trial and error (using a multiple-response approach to identify an appropriate response). Adequacy of performance is judged by an instructor or by a suitable set of criteria. • Performs a golf swing as demonstrated • Applies first aid bandage as demonstrated • Determine best sequences for preparing a meal
Mechanisms	Mechanisms concerned with performance acts where the learner responses have become habitual and the movements can be performance with some confidence and proficiency learning outcome at this level are concerned with performance skills of various types, but the movement pattern are less complex than at the next higher level. • Writes smoothly an legibility • Sets up laboratory equipment • Operate a slide projects • Demonstrates a simple dance step

Complex overt response	Complex overt response is concerned with the skilful performance of motor acts that involve complex movement pattern. Proficiency is indicated by a quick, smooth, accurate performance, requiring a minimum of energy. This category includes resolution of uncertainty (performance without hesitation) and automatic performance (movements are made with ease and good muscle control). Learning outcomes at this level include highly coordinates motor activities. • Operates a power saw skilfully • Demonstrates correct form in swimming • Demonstrates skill in driving an automobile • Performances skilfully on the violin • Repairs electronic equipment quickly and accurately
Adaptation	Adaptation is concerned with that are so well developed that the individual can modify movement patterns to fit special requirements or to meet a problem situation. • Adjusts tennis play to counteract opponent's style • Modifies swimming strokes to fit the roughness of the water
Organization	Organization refers to the creating of new movement pattern to fit a particular situation or specific problem. Learning outcomes at this level emphasize creatively based upon highly developed skills. • Creates a dances step • Creates a musical; compotation • Designs a new dress styles

Source: Gronlund, Norman. (1981). Measurement and evaluation in teaching.

Table 03: Major subcategories of the affective domain

Receiving	Receiving refers to the students' willingness to attend to particular phenomena or stimuli (classroom activities, text book, music, etc). From a teaching standpoint,. It is concern with getting holding and directing the student's attention. Learning outcomes in this area from the sample awareness that a thing exists to select attention on the part of the learner. Receiving respondents the lowest level of learning outcomes in the affective domain. • Listens attentively • Shows awareness of the importance of learning • Shows sensitivity to social problems • Accepts difficulties of race and culture • Attends closely to the classroom activities
Responding	Responding refers to active participation on the part of the students. At this he not only attends to a particular phenomenon but also reacts to it in some way. Learning outcomes in this area may emphasise acquiescence in responding (reads assigned material), willingness respond (voluntary reads beyond assignment), or satisfaction in responding (reads for pleasure or enjoyment). This higher level of this category include those instrumental objective that are commonly classified under interest: this is, those that stress the seeking out enjoyment or particular activities. • Completes assigned homework • Obeys school rules • Participations in class discussion • Completes laboratory work • Volunteers for special tasks • Shows interest in subject • Enjoys helping others
Valuing	Valuing is concerned with the worth or value a student attaches to a particular object, phenomenon, or behaviour. This ranges in degree from the more simple acceptance of a value (desires to improve group skills) to the more complex level of commitment (assumes responsibility for the effective functioning of the group). Valuing is based on the internalisation of a set of specified values, but clues to these values are expressed in the student's overt behaviour. Learning outcomes in this area are concerned with behaviour that consistent and stable enough to make the value clearly identifiable. Instructional objectives that are common classified under attitudes and appreciation would fall into this category. • Demonstrates belief in the democratic process

- Appreciates good literature
- Appreciate the role of science (or other subject) in every life
- Shows concern for the welfare of others
- Demonstrates problem solving attitudes
- Demonstrates commitment to social improvement

Organization

Organization is concerned with brining together different values, resolving conflicts between them, and beginning the building of an internally consistent value system. Thus the emphasise is on comparing, relating, and synthesizing values. Learning outcomes may be concerned with the conceptualisation of a value (recognize the responsibility of each individual for improving human relations) or with the organization of a value system (develop a vocational plan that satisfies his need for both economic security and social service). Instructional objectives relating to the development of a philosophy of life would fall into this category.

- Recognizes the need for balance between freedom and responsibility in a democracy
- Recognizes the role of systematic planning in solving problems
- Accepts responsibility for own behaviour
- Understand and accept own strengths and limitations
- Formulates a life in harmony with his abilities, interest, and beliefs

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Characterization by a value complex

At this level of the affective domain, the individual has a value system that has controlled his behaviour for a sufficiency long time for him to have developed a characteristic life style. Thus the behaviour is pervasive, consistent, and predictable. Learning outcomes at this level covers a broad range of activities, but the major emphasis is on the fact that the behaviour is typical or characteristic of the student. Instructional objectives that are concerned with the student's general patterns of adjustment (personal, social, emotional) would be appropriate here.

- Displays safety consciousness
- Demonstrates self-reliance in working independency
- Practices cooperation in group activities
- Uses objective approach in problem solving
- Demonstrates industry and self-discipline
- Maintains good health habits

Source: Gronlund, Norman. (1981). Measurement and evaluation in teaching.

Based on above three learning cognitions, educational philosopher has to design curricula to meet the demands created by industries. When they develop a curriculum, there is another focal aspect to be considered; the linkage of different components which is constructive alignment.

Constructive alignment

The importance of aligning teaching methods and assessment tasks is stressed in many publications parting to curriculum development in higher education. In essence the notion of constructive alignment derives from constructive theory, which suggests that learners actively construct their own knowledge and understanding. Within the constructive paradigm, considerable stress is given to meaning, reflection and context and teaching is about the provision of a context that allows the facilities of desirable learning outcomes. This is 'constructively aligned' teaching (Biggs, 1996).

The concept of designing curricula using a constructive alignment approach is gaining momentum at the moment in Higher Education. Improvements, even through it is nothing particularly new (originally proposed over 20 years ago) and is very simple in essence. Its leading proponent is John Biggs who in a widely regarded text describes a process of taking strategies and an integrated approach to curriculum design. This is now being accepted as a fundamental tenet of university education in an enhancement - led environment. The theory builds on the work of constructive psychologists such as Piaget and the learning theory of educationists such as Entwhistle, Prosser and Trigwell, and Marton (Phenomenography) and Saljo.

Basically the theory has three fundamental tenets;

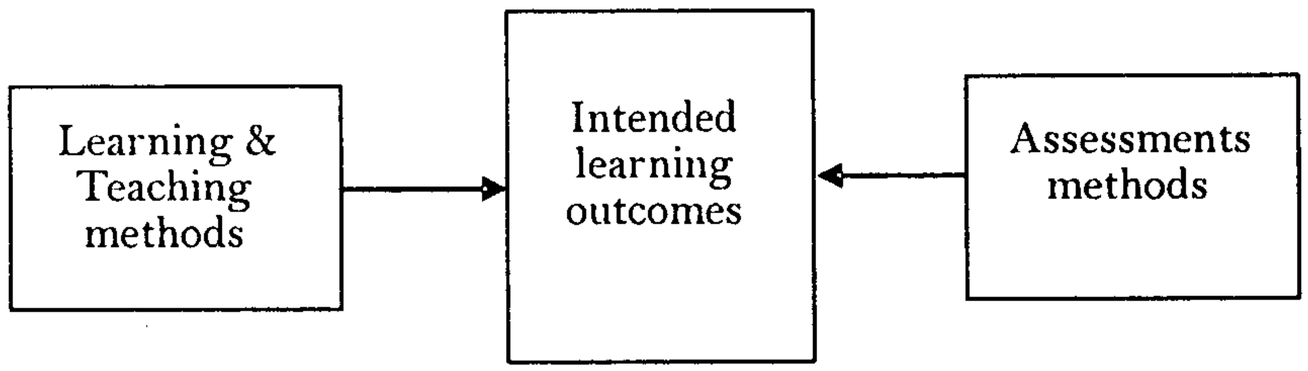
- The overall process of learning is build on a framework of curriculum design in which intended learning outcomes, teaching methods, assessment and evaluation are all independent and only by truly integrating these components together, do we get efficient student learning.
- Staff involved in teaching must develop a Reflective Practitioner approach to their work and be prepared to learn from their mistakes and successes
- Meaning is not imposed or transmitted by direct instruction - it is created by the student's own learning activities.

In essence, if we have a student with already well - founded learning skills, confidence, enthusiasm and motivation and a student with low motivation, poor learning skills and little confidence, then the gap between their performance will be greater the more the passive nature of teaching. On the

other hand the more we engage the students in active learning, the less the gap will be and the less-able students will be more likely to succeed.

The basic premise of the whole system is that the curriculum is designed so that the learning activities and assessment tasks are aligned with the learning outcomes that are intended in the course. This means that the system is consistent as depicted in the following figure 02.

Figure 02: Relationship between learning outcomes, learning & teaching methods and assessments methods



As explaining by above two theories, university education system should be developed as in figure 02.

According to figure 03, there are three domains, which are cognitive, psychomotor, and affective. These three domains should be used to develop learning outcomes of a course, teaching and learning strategies, teaching & learning environment, and assessment methods. As an example, at the beginning of a curriculum, basic course should be given more "knowledge" rather than "evaluation" aspect of cognitive domain. But "evaluation" aspects of cognitive domain should be more at the higher level of the curriculum. Simultaneously learning outcomes, teaching & learning strategies, teaching & learning environment and assessment in the cognitive domain should be based on incrementally progressive in manner. In the psychomotor domain, at the beginning of a curriculum, it should be focused on the aspects of "perception" and "set" more than the "adoption" and "organization". However, at the final year of a degree program, it should be on highest stages of the psychomotor domain. In teaching & learning methods, teaching & learning environment and assessment strategies of the psychomotor domain should be based on progressive manner in each year.

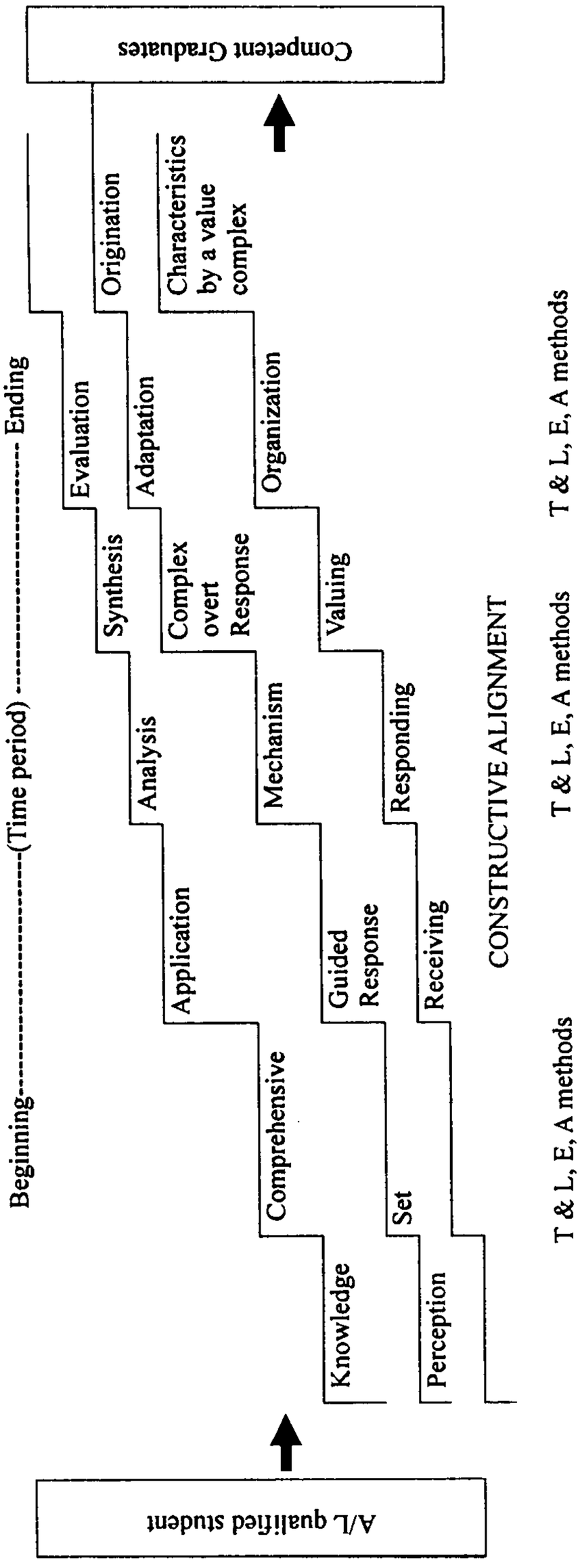


Figure 03: University Education System - Proposed Framework

As an enhancing appropriate attitude system on undergraduates, the affective domain should be used in the curricula on gradual incremental basis. At the beginning of a curriculum it should be focused to "receiving attitudes" rather than "characteristics by a value complex". However at the final year, students should be enriched with "characteristics by a value complex" aspect of the affective domain.

What is explained above is that, how to set leaning outcomes, teaching, learning and assessments methods in all leading domains ensuring that they are constructively aligned. This will enable to produce qualified graduates with required knowledge, skills and attitudes to meet the industry expectations.

Conclusion

According to the practices of Sri Lanka, there is no good links with university educational system with industrial demands. There are sufficient evidences to prove this phenomenon. In current practices, the curricula of university system had changed many times to meet the demands of the industry. However, these efforts were not being success. As pointed out in figure 01, and 03, the system should reduce the gap between qualities of entered students to university system and qualified graduate, who is capable to cater to the demands of industry. If the university educational system is based on three learning domains with constructive alignment of course outlines, teaching & learning strategies, teaching & learning environment, and assessment methods, it will create graduate with higher level knowledge, skills, and attitudes (cognitive, psychometric, and affective) who will be capable to cater with the demands of a job in any field or industry. For an instance, in the final year, an undergraduate has to have the ability of synthesis and evaluating abilities of learned matters. So he is rich with knowledge in his field. Under the psychomotor domain, when an undergraduate comes up to the highest in the final year, he or she has an ability to do practical assignments in his or her filed with competence or has an highest flexibility to adopt to practical situations within a short time period. Finally when an undergraduate comes up to the highest stage of affective domain, he or she has an appropriate attitude and value system to his or her field. All together, this model explains that at the final stage of university system can generate most appropriate graduate to meet the demands of an industry.

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