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Dayananda Keppetigoda**

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The Editor

SAARC Journal of Educational Research
National Institute of Education
Maharagama

Tel. 0094-1-7601601 Ext. 785

Fax. 0094-1-2851300

Email : dkeppetigoda@nie.lk

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Tel. 0117601601 Fax: 0117601622 e-mail : nie.lk@hotmail.com

(Publication Department)

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2. to promote and encourage original critical investigation of issues relevant to educational development in SAARC countries.
3. to encourage those interested in education to involve in research activities.

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- ☞ Abstract of about 100 - 150 words
- ☞ An introduction giving the problem, its background and objectives
- ☞ A brief description of the methodology
- ☞ The results of the study supported by relevant data
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Pay attention to the under - mentioned when preparing the manuscript.

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☞ Attach a cover page with title, name and affiliation.

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The Nature of Change in Deep and Surface Study Approaches: A Study of Student Characteristics over Time and across Subjects

S. Justin Perera, Associate Professor(Retired), Formerly in Department of Education, University of Peradeniya, SriLanka and Thomas R. Black, Senior Lecturer, (retired) Formerly Department of Educational Studies, University of Surrey, U.K.

ABSTRACT

This thesis was concerned with persistence and change in Entwistle's approaches to studying, the deep and surface study approaches. Approaches to studying were seen as part person-dependent and part context-dependent: the former implying persistence and the latter change. Therefore, it was hypothesised that these two aspects might interact differently when contexts, for example, subject disciplines studied, were not the same, in which case it was hypothesised that a context of exposure to a specialised to a subject discipline may arguably confirm or modify the student's personal approach. To explore the possibility in the first instance the association between study approach and choice of subsequent specialisation was investigated after which this association was followed through A-level specialisation contexts which were congruent or incongruent with the earlier expressed choice, with the expectation that the association (found) between study approach and choice would,

1. *intensify in congruent contexts*
2. *weaken in incongruent contexts*

At O-level it was found that study approach is associated with expressed choice of A-level specialisation, but one year later when study approach was re-tested, contrary to expectations this association did not intensify or weaken in contexts of specialisation that were congruent and not congruent, respectively, with the expressed choice. Linked with the one significant result, an overall increase in the use of surface approach over time, these outcomes suggest a need for an investigation into links between teaching approaches in Sri Lankan A-level classes and study approaches.

Introduction

The sources of information available to understand the students in the role of the learner are varied. Until recently, the emphasis was on the individual and individual differences. Much earlier, environmental influences were seen as the primary potential influence on successful learning. However, the complex milieu of the learning environment appears to require a different solution (Entwistle, 1998; Biggs, 1993) that combines both person and learning environment, the context. Deep and surface approaches to studying are an outcome of this model and have implications to success and failure in learning: deep study approach is positively related to academic achievement, whereas surface study approach is negatively related (Entwistle and Ramsden, 1983).

The study approaches, the term used by the Entwistle group (or levels of processing by Marton and Saljo, 1976a:1976b), purportedly have both person-dependent and context-dependent aspects. The person aspect of these study approaches implies persistence while the context aspect implies change. The situation may be complicated, however, if these two aspects (person-dependence and context-dependence) interact: a student's habitual approach to the task of study may influence academic performance in, and motivation towards, *certain* subject disciplines. A context of exposure to a specialised subject discipline may arguably confirm, or modify, the intensity of the student's personal approach.

The Problem

The interaction mentioned above appears to have been largely left open for exploration in research in student learning that have combined person-dependence and context-dependence aspects in its learning constructs. Could contexts *chosen* by students (congruent) result in increased application of a study approach, whereas contexts inimical (non congruent) to their choice lessen existing practices? It is answers to these questions that are sought in this investigation, relating as they are to the nature of change of study approaches. Past research has mainly related to learning environments *per se* or perceived environments (Entwistle, 1991).

Overall question and the investigation

What would be the nature of any change in intensity of application (use of) study approaches over time, depending on whether students studied subjects of their own choice or not?

The present investigation takes advantage of the secondary school system in Sri Lanka, where the majority of the students move at the age 16 from a standardised broadly based multidisciplinary curriculum to a narrower and specialised subject range, motivated in most cases by personal choice. The research seeks to establish by cross-sectional survey to what extent students' level of use of approaches to study, before specialisation, are related to their preference for certain 'subjects' (classified broadly as Arts and Sciences) in the curriculum, and to their choice of subject in which they subsequently specialise. It will *then* seek to establish, by longitudinal data collection, to what extent the level of their characteristic study approaches are modified as they experience specialised study in *conformity* with, or in some cases at *variance* with, their original preference and choice.

In Sri Lanka since the early 1970s the secondary school system has had a period of common General Education to all students to age 16, prior to that of specialisation beginning at 17-18. Thus this situation appeared to facilitate the examination of how the level of a study approach is subject to change as a consequence of specialisation when specialisation is preceded by a uniform education for all.

Research design of the study

This overall question of the investigation suggests a longitudinal study, its reference to 'over time' is an indication of this. Besides this, however, the need for a cross-sectional study to identify relationships at the commencement that are examined in the longitudinal study, follows. Thus there is the need for both methods to answer the overall research question.

Study approaches in cultural context

In contrast to other accounts of human learning, the possibility exists that these constructs are cultural phenomena which are socially constructed (Richardson, 1994, p. 450)). Richardson points out that the progenitors of these constructs, the Marton Group, were aware of this. A cultural influence can arise, as Richardson argues, by differential conceptualisation, e.g., different cultural meanings attached to different types of study activities. A much simplified illustration is 'memorisation' could be understood (or misunderstood) as meaning 'understanding'. This is then likely to be reflected in the responses of the students to the instrument of measurement or at interviews. If these responses have a different meaning in the non-western setting from what was intended in the Western setting, then the obtained data would not be a true reflection of the constructs supposedly investigated. Hence this study first examined the applicability of Study Approaches in the Sri Lankan context. This is discussed in detail elsewhere (Perera, 2002). An issue central to this problem is whether Deep Study Approach is a separate construct from Surface

Study Approach in as much these two approaches have components, in the former 'understanding' and in the latter 'memorisation' in their formulations, among other components. From the illustration given above, if by understanding is meant memorisation in some cultures the two constructs would no longer be independent to each other and there would be no basis to speak of two entirely separate study approaches, Deep and Surface. This had to be dispelled in the first instance for its use in Sri Lanka but which might be true in some non-Western and with respect to some study approach measuring inventories. With reference to possible instruments one might say there was support for the use of RASI (Entwistle's Revised Approaches to Study Inventory) or an analogue of that for measuring study approaches in the Sri Lanka context as its construct validity held firm in non-Western settings, even among Chinese students with whom the question of cultural specificity first arose. The examination also ensued relatively greater cross-cultural applicability of the chosen instrument, i.e., the ASI, *School Version*. To ensure cultural features inimical (excessive memorisation as in the Chinese context) for the application of this instrument in Sri Lanka are absent, a comparative examination of its secondary school education system with that of the West (UK) was made and affirmed. This led the way to choose the instrument (School and School Work Inventory), a school version of Entwistle's Approaches to Study Inventory (ASI) for the study. In the Chinese context, though not a matter of concern here, the thinking is that understanding can be arrived at by memorising also. This is inimical to the the Western understanding of memorisation which is mechanical.

Significance of the study

Some of the aspects of the study that are envisaged as having an impact on education are as follows:

- The proposed study is valuable in that it may help resolve whether the person aspect (persistent) or context aspect (changing) of study approach is dependent upon *certain* contexts (that is, contexts (or disciplines) of

choice). If this shown to be the case, then these findings have implications for the definition of the concept of study approach as proposed by Entwistle. Thus the investigation has the potential to find out whether the person aspect and context aspect separation in study approach is valid.

- There is potential in the investigation to determine whether an educationally desirable study approach could be sustained in a context to which it has shown a positive motivation. If possible, this would pave the way to the personalisation of instruction.
- In the wider sphere, there may be benefits for a more successful instructional design that would arise by taking into consideration learning and study approaches, for instance, taking into account students' different perceptions in the same learning context. Thus, to try to improve the processes employed in schools by changing just one factor (e.g., the assessment system or the study methods of students) is likely to be counter productive if other components of the system remain unchanged (Ramsden, Martin and Bowden, 1989). The apparent inadequacy of instructional design based on simple general laws of learning (e.g., as in behaviourism or information processing models) is suggested in the model of learning investigated in the present study.
- approaches to studying that describe *how* students study emphasise the *process* component of studying. As such, the present investigation appears to be using a general purpose instrument and hence one of greater utility in quantifying such characteristics.

Methodology

Described fully elsewhere (Perera, 2002) is the rationale for using Entwistle's Approaches to Learning and Studying Inventory (ASI) which has had as its methodology interviews similar to that conducted by the Marton Group (Entwistle *et al.*, 1979). However, the current methods of the Entwistle Group takes the form of administering this inventory to large samples and generating quantitative data, which is what the present investigation will do to answer this study's research questions.

Population, Sample, and the Experimental Groups

Population and sample

The sample was drawn from a population of final year O-level students in Sri Lanka in 1994. They were tested in the month of October (the first testing occasion) before the O-level examination which was due in December. The population was urban schooling children. Random cluster sampling was adopted in selecting 11 schools from the population of 18 leading urban schools. The population of schools was from two areas. One was the capital (Colombo) and the other the city regarded as the second capital (Kandy). Within each selected school, the aim was to obtain data from *all* the students in that school in the O-level final year classes. This comprised the origin of the sample. By the procedure adopted and described above, the sampling could be described as cluster sampling with a certain purpose in view, to select from the most able. Since urban schools on the whole have the best students in Sri Lanka these were used in the study as Entwistle (1988, P. 41) notes, the instruments tend to only work with above average students (when secondary sector students are under consideration). This observation is based on Biggs's (1985) earlier finding that the factor structure disintegrates in generally less than able secondary school populations. In the present investigation a preponderance of such students can reasonably be expected to be in schools in the less developed rural areas. From this point of view, it could be said that the population to whom any inferences would extend, will be urban students only.

The second reason to choose the sample from urban based schools was the intended longitudinal nature of the study which necessitates by and large the retention of the population across the O-level / A-level divide. Statistics are available that says that this resides mainly with respect to urban based schools. The extent of this retention is more than 90% in such schools.

How they were divide into two groups, one group preferring Arts subjects in the O-level curriculum and the other group preferring Science is described below. Underlying the categorisation was the assumption that the

diverse subjects in the O-level curriculum could be categorised either as Arts or as Science.

Subject preference groups

One of the items in this questionnaire (hereafter called the short questionnaire) asked the students to indicate the most liked three subjects, in rank order. Of the three most liked subjects indicated by students the one ranked first was considered the preferred subject, arts or science. Those who ranked as first in liking mathematics were also considered as preferring science (due to the rather close interrelationships of the two subjects). This was done in the present investigation to obtain a group of students who preferred the subject science. In the case of students who ranked as first in the order of liking an arts subject, e.g. Social Studies, were considered as preferring arts subjects. The answer had to be science or arts as no other categorisations of subjects were attempted. All student responses were scored for these two preference categories.

All students at the OL in Sri Lanka study the same six subjects. Of the two remaining categories (called Aesthetic and Technological), students had to choose one option from each, thereby making up the eight OL subjects that constitute the whole examination. In a few instances students ranked as the most liked an option in the two categories, for example, Radio Technology (Technological). This liking was considered a preference for the subject science. When the option Commerce (Technological) was ranked first in terms of liking (to give another example) preference was decided upon as being for arts subjects. Further, when the option subjects Dancing or Music (Aesthetic) were ranked first in the order of liking, they were considered a preference for arts.

It would be noted here that though three preference responses were drawn from a student, only the first in order was given consideration in allocating preference. The strategy adopted was to make the students to first

recollect the subjects in its entirety as far as possible, and then to rank order them. By this means it was considered that the reliability of preference expressed would be more than that would be expressed by a simple dichotomous arts/or science preference one.

Specialisation choice groups

Whilst still at O-level and at the same time they responded to subject preference described above, the students were asked what A-level subject stream would they wish to follow upon entry to the A-level class. The relevant question was also in the Short Questionnaire (described later). This was not an unreasonable question by Sri Lanka standards, as almost all urban students become successful in entering the A-level class from the O-level. The response to this question is that described as 'choice' in the investigation. To assist the students to respond, the three available choices were mentioned in the test item, the students having only to underline one of the mentioned options: Arts, Commerce and Science.

As with respect to determining subject preference that was described above, an attempt to safe-guard the reliability of expressed choice was made by *providing* the option labels, ensuring somewhat that they are not responding entirely in the abstract. The need for this provision followed the fact that the test item asked an aspect the students have not as yet experienced.

The congruency groups

At the time the second administration of the *School and School Work Questionnaire* was performed which was one year on to specialisation (selection) at A-level, note was made of the *actual* A-level subject stream the students were following. For this purpose, the students were asked to write with their personal details the label of the class that they were studying, which was checked by the investigator. After this was known, the *congruency groups*

were formed. Expressed choice of specialisation was two-fold: Arts or Science. Actual specialisation was also two-fold: Arts or Science. Those students whose choice and selection were the same constituted a congruent group. In students they were different (two paths available), constituted an incongruent group. On this basis, four congruency groups were formed:

1. choice Arts, selection Arts (congruent Arts, AA)
2. choice Science, selection Science (congruent Science, SS)
3. choice Arts, selection Science (incongruent Science, AS)
4. choice Science, selection Arts (incongruent Arts, SA)

Instruments

Two instruments comprised this aspect. These were:

- A short questionnaire to elicit student subject preference and choice of specialisation (Appendix A)
- Entwistle's student version of the ASI called School and School Work Inventory (SSWI, Version KE3) (Appendix A).

The main instrument under consideration for the present investigation (Approaches to Studying Inventory) has a long history and appears to have undergone many revisions and refinements (Entwistle, 1988) and as such embraces a certain amount of confidence. The School Version of this Inventory is a subsequent development of this and is the one of main interest in the present investigation.

The school and school work inventories

The intention of developing a school version of the Approaches to Studying Inventory (for adults) appears to have been strengthened by the findings of individual consistency and inter-task variability in approaches to studying among secondary school pupils by Selmes (1987). The result has been the development of the above-mentioned School and School Work Inventory. Entwistle (1988) has the following to say regarding the development of it.

Nine of the subscales of the student inventory were considered applicable to schoolwork. The intention was to retain, as far as possible, the main features of the Meaning, Reproducing, and Strategic Orientations. However as pupils have little opportunity for strategic studying, at least in the sense of cue seeking, strategic approach was defined, instead, as a highly organised way of tackling school work with an eye to good attainment (p. 39)

Thus the main features of the adult inventory appears to have been retained and this makes it possible for comparisons with adult samples to be meaningfully made, an aspect of importance as most of the findings in the literature in fact relate to the latter. In previous studies (Entwistle and Kozeki, 1985) a school version of the inventory appears to give satisfactory measures of reliability across different cultures. Thus with a British secondary school sample, the *internal consistencies* (Cronbach's α) for Deep and Surface approaches have been, in the above study, 0.66 and 0.53 respectively. In the same study, for the Hungarian secondary school sample, the corresponding measurements have been 0.64 and 0.61 (p. 129). The Test-Retest reliabilities in the Hungarian school sample for Deep and Surface approaches have been 0.72 and 0.73 respectively (Entwistle and Kozeki, 1985;p 129).

The school and school work instrument of the present investigation (KE3)

The version described in the previous section (Entwistle and Kozeki, 1985) does not give a particular identification number. There appears to be several parallel forms of the inventory (KE3, Secondary School Project etc.), differing slightly. In the Secondary School Project Version five items constitute each subscale, e.g., Deep and Surface subscales. In the version labelled as KE3 six items constitute each subscale. The version used in the Entwistle and Kozeki (1985) study is described as a six-item subscale version. But apparently it is not the same as the KE3 version as the latter has items concerning Relating Ideas (in the Deep domain) which were absent in the version used in the 1985 study of Entwistle and Kozeki (Entwistle, 1988, p.39). Thus, regarding the latter, Entwistle (1988) notes “The processes of subscales of Meaning Orientation were omitted,..” (p. 39).

Relating Ideas constitute one of the aspects of the cognitive processes components in the adult version, the other being Use of Evidence. However, in the KE3 version used in the present study both are retained and was used as such. Retaining Relating Ideas Use of Evidence in the present investigation was not an accident. It was expected that in such an instance a demarcation between the disciplines Science and Arts is more likely to be seen, if this aspect gains in importance. It was the view that Science would entail more of these thinking strategies. The English medium inventory (KE3) was translated into Sinhalese twice, the second time after a back translation into English. A qualified teacher and translator did the translation. An effort was made by the translator to convey the intended message in a test item rather than to make a literal translation.

Reliability of Instrument (KE3)

This was measured in two ways:

- Internal consistency (Cronbach's α)
- Consistency over time (Test- Rest Method)

Cronbach 's α for the Deep Study approach scale of six items was 0.56 (for boys 0.50 and girls 0.57) in the start sample (n = 1347). Thus this scale appears to have moderate reliability. But that of the Surface Study approach of six scales was on the lower side (Total α = 0.31, boys = 0.33 and girls =0.41).

This low internal consistency of the surface approach has been noticed in earlier studies. In the present investigation it appears to have been largely caused by one item, item number 34 (see Appendix A). The scores obtained on this item correlates with the total scale score only to the extent of 0.19 in the total sample (for boys and girls, 0.20 and 0.19 respectively). Thus the item number 34 deserves special examination. It is presented below for scrutiny:

Item Number 34: "I like to be told precisely what to do in essays and other set-work"

In this item the phrase set-work may not have been understood in the same way by all students, since in Sri Lanka an equivalent phrase is not used. The translation was as 'projects', as this word is more familiar. However, 'projects' too are not frequently given to students. It is possible that this relative unfamiliarity of doing projects contributed to the low item-total correlation. However, this view is need of clarification.

The Test-Retest reliabilities of the deep and surface study approaches were calculated in a sample of boys (n = 92) with a time separation of two weeks, and they were respectively, 0.41 and 0.40. These are also on the lower to moderate size. The interpretations of the findings would take these into consideration.

The worrying aspect of this is that lower reliability can lead to potentially lower power in subsequent statistical tests. This would result in a lower probability of finding a significant difference when a significant difference was actually there (Black, 1999; pp. 429-431).

The short questionnaire

Named as such, this refers to the instrument which was used in the cross-sectional study. As such it was constructed to elicit from the students mainly their,

- preference for subjects in the General Education curriculum at O-level.
- choice of A-level specialisation whilst the pupils were still at O-level.

A translated (from Sinhalese) copy of it is attached in Appendix A.

It was planned that the two questionnaires would be administered to the sample at one sitting. The first one administered was the short questionnaire one. Upon completion of this the above described School and School Works Inventory was administered. Students took about 15 minutes to complete the former, and about on the average, about 30 minutes to complete the second.

Results of data analysis

This section has as its main aim to present the results of the data analysis (the main sources of the data being that obtained by the administration of the two instruments-*The Short Questionnaire* and *The Inventory of School and School Work*). This phrase embodies two components: one is concerned with presentation of results, and the other with the analysis of the data.

The first aim here is to provide enlightenment on the characteristics of the group(s) considered in the investigation. This aspect is now given added impetus in research since the publication of Tukey's (1977) work in which he has argued the need to pay greater attention to the data before subjecting them to analysis. Secondly, as is the intent with inferential statistics, the techniques applied have been adopted to make inferences about larger groups (populations) based upon the data collected on the sample. Each section, therefore, will include both descriptive and inferential statistics. However lack of space does not permit the full reporting here which is found elsewhere (Perera, 2002). Nevertheless brief descriptions will be presented when necessary.

The frequency distribution of subject preference data in the whole sample

The frequency distribution regarding subject preference data in the whole sample (n=1685) is presented in Table 1. These figures show that a preponderance of these students prefer science subjects, probably reflecting a feature of the cultural setting in Sri Lanka.

Table. 1 Frequency Distribution of O-level Subject Preference

O-level Subject Preference	Frequency
Arts	602
Science	1083
Total	1685

The distribution of the deep study approach scores in the whole sample

It is desirable to know the nature of the distribution of the data in the whole sample.

The score range for this instrument was from 6 to 30, the higher the score the greater levels of use deep approach. There was a ceiling effect in the distribution of scores. This is a characteristic that merits further investigation and will be discussed later. As a result, the distribution appears slightly negatively skewed, but on the whole it has the potential to be a normal distribution with scores on the either side. However the distribution of study approaches data in general appear to deserve independent study, as past research is not very helpful in this matter.

The distribution of the surface study approach scores in the whole sample

This distribution easily appears to take the form of a normal distribution. The scores indicate the magnitude of the intensity of use of the surface study approach, the higher the score the greater levels of use of this study approach. The score range on this instrument also ranged from 6 to 30, with the higher the score the greater the intensity use of surface approach.

Thus on the whole application of parametric tests to the collected research data appeared justified in the study. Following this, testing of the hypotheses were done, beginning with testing of association of study approaches with subject preference.

Association of subject preference with study approach

This aspect of the investigation (i.e., of determining the association of O-level subject preference and Study Approach) is carried out to begin the establishment if there were any association between the O-level and A-level Arts and Science curricula and the study approaches investigated.

Hypothesis 1.1 stated that the mean Deep/Surface Study Approach score of students preferring Arts subjects will be different from that of those preferring Science subjects (the preference being in regard to the subjects in the O-level curriculum, divided broadly into two, as Arts and Sciences). This hypothesis was designed to answer the research question:

Would subject preference be associated with Study Approach?

It is preferable to test the hypothesis by its null hypothesis, that states there will no difference between the two mean scores or in other words the means are of the same population. This was done in all cases in the study.

Table 2 shows that the mean deep study approach score of the group of students who have a preference for Science subjects in the O-level curriculum is higher than that of the Arts subjects preferring groups. The appropriate statistical test that could be applied to test the null hypothesis is a test that compares two groups, the parametric *t*-test, since the measurement is considered to be on a continuous scale.

Additional conditions for its application given as follows, have also been met: Otherwise the test should be modified dependent on whether these conditions are met. Black (1999, pp. 402-414) discusses this issue. The conditions for its application given as follows, have been met:

- the samples are independent
- the variances are nearly equal
- the samples are large (> >)
- the samples are equal (here since they are large, being of the same order of magnitude is adequate)

The *t*-test being a parametric test, the data should have normal distributions, though the test is considered robust enough to allow for some skewness (following ceiling effects like in whole sample). As the *t*-test has been described as *robust*, it will tolerate some non-normality and even some

differences in the variances (Black, 1999, p. 419). Hence the parametric *t*-test was applied to test the null hypothesis and the data are contained in Table 2.

The results of this analysis are also summarized in Table 2 and shows that Science subjects preferring students have a significantly higher mean Deep Study mean score than those preferring Arts subjects.

Subject Preference

Table 2 : Subject preference *t*-test data for Deep Study Approach

	Preference for subject is Arts (n=602)	Preference for subject is Science (n=1083)	<i>t</i>	Sig.
Mean	23.60	24.57		
SD	4.14	3.79	4.80	p< .01

A similar analysis was made with respect to Surface Study Approach scores and the results of this analysis is shown in Table 3 below. The score distributions in this instance were normal and homogeneity of variances were observed..

Table 3 : Subject preference *t*-test data for Surface Study Approach

	Preference for subject is Arts (n=602)	Preference for subject is Science (n=1083)	<i>t</i>	Sig.
Mean	16.78	16.01	3.78	p<.01
SD	4.17	3.98		

Table 3 shows that Arts subjects preferring students have a significantly higher mean Surface Study mean score than those preferring Science

subjects. The power of the *t*-test was found to be 0.962, indicating a high probability of correctly rejecting the null hypothesis.

The above are results of the two separate study approaches scales used in this study (Deep Study Approach scale and Surface Study Approach scale).

Subject Choice (leading to subject specialization stream)

This section has as its interest choice of future specialisation in relationship to Study approach. Firstly, the frequency distribution of choice with respect to the Arts and Sciences specialisation (at A-level) is noted in Table 4.

Table 4: Frequency Distribution of A-level Specialisation Choice

A-level Expected Specialisation (Choice)	Frequency
Arts	616
Science	1069
Total	1685

Similar analyses were performed with respect to choice of selection by the students (whilst they were still at O-level) and the results are presented in Tables 5 and 6 below.

There is a difference in the frequencies in Tables 1 and 4. That is, a few who *preferred* one subject were not consistent in their indication of Expected Specialisation (choice) on the same questionnaire, which may reflect such influences as employment prospects and family expectations.. We also note that a greater number of students in the sample expect to specialise in the Sciences. That is, to a great majority their *choice* is Science, nearly twice that of the Arts. The difference may be explained that in Sri Lanka that an education in the Sciences is presently highly valued.

Table 5 : Subject choice *t*-test data for Deep Study Approach

	Preference for subject is Arts (n=616)	Preference for subject is Science (n=1069)	<i>t</i>	Sig.
Mean	23.19	24.83	8.23	p< .01
SD	4.15	3.66		

Table 6 : Subject choice *t* Test data for Surface Study Approach

	Preference for subject is Arts (n=602)	Preference for subject is Science (n=1083)	<i>t</i> pooled	Sig.
Mean	16.84	15.96		
SD	4.15	3.98	4.35	p<. 01

Again, Science subjects *choosing* students had greater Deep Study Approach mean scores than Arts subjects choosing students, and Arts subjects choosing students had greater Surface Study Approach scores than Science subjects choosing students.

Summary of the finding regarding preference for subjects

Preference for subjects was found to be associated with the deep study approach and surface study approaches. With respect to the Deep Study approach it was found that Science subjects preferring students had higher scores and the Arts subjects preferring students had lower scores. With respect to the Surface Study approach, Arts subjects preferring students had higher scores than Science subjects preferring ones.

Summary of the finding regarding choice of (expected) specialisation

Choice of specialisation was found to be associated with the Deep Study Approach and Surface Study Approach. With respect to the Deep Study Approach it was found that Science choice students had higher scores and the Arts choice students had lower scores. With respect to the surface study approach, Arts choice students had higher scores than Science choice ones. These associations (this and the previous one), then, as consistent, could legitimately be pursued in the longitudinal study results of data analysis of which are reported next.

DATA ANALYSIS IN THE LONGITUDINAL PART OF THE STUDY

Formation of the groups

The groups formed at the commencement of subject specialisation were as presented in Table 7.

Table 7 : Choice and selection of A-level specialisation

		Selection		
		Arts	Science	Total
Choice	Arts	345	103	448
	Science	169	739	908
	Total	514	842	1356

The discrepancies between choice and selection in student numbers may be due to the nature of the O-level results that *followed* choice. If so, more Arts choice students have done better in this examination whilst less Science choice student have done well. This may be the major reason, however, other reasons may exist

Reference to Table 7 shows that out of 448 students whose choice of specialisation was Arts, 345 were accepted for Arts specialisation (selection), whilst out of 908 whose choice was Science, 739 were accepted for Science specialisation. These two groups formed the congruent specialisation groups in this study. The other two groups of 103 and 169 formed the incongruent specialisation groups Arts-Science (AS) and Science-Arts (SA), respectively. The above mentioned congruent groups could be denoted by with labels AA and SS, respectively.

Hypotheses in the Longitudinal Study

Table 8 presents a model depicting the measurements involved.

Table 8 : Model to illustrate measurements related to Hypotheses 3.2

Selection congruency	Before	After (1 year)
SS	O _{1ss}	O _{2ss}
SA	O _{1sa}	O _{2sa}
AS	O _{1 as}	O _{2as}
AA	O _{1 aa}	O _{2aa}
	åO ₁	å O ₂

Note: SS (congruent science selection) AA (congruent arts selection)
 SA (incongruent science selection) AS (incongruent Arts selection)
Before: measurement of Study Approach at end of General Education
After: *measurement of Study Approach 1 yr after 1st measurement*

The hypotheses were three in number and were as follows:

Hypothesis 3.1: In a sample of A-level students in Sri Lanka the mean deep study approach scores at *choice* (O_1) of SS, SA, AS and AA would be significantly different from each other.

Hypothesis 3.2: In a sample of A-level students in Sri Lanka, the mean Study Approach scores O_1 at choice will be significantly different from that of the mean of scores O_2 with selection of each group of students (SS, SA, AS and AA).

Hypothesis 3.3: In a sample of A-level students in Sri Lanka the mean Study Approach scores at *selection* (O_2) of the groups SS, SA, AS and AA would be significantly different from each other.

Again, the hypotheses were tested in terms of their null hypotheses though these are not spelled out as such terms here.

Across groups & over time

At choice, across groups

The hypothesis at choice was formulated to function as a baseline to compare with the findings at selection across groups rather than to answer a particular research question. The statistical testing of choice hypothesis suggests the adoption of a one-way analysis of variance. However as Black (1999; p.487) says, factorial designs are more desirable than a number of separate one-way analyses of variance, allowing the testing of the other null hypotheses as well as the first scrutinised.

The over time condition

Each group constituted of the *same* students in the two conditions over time. This Hypothesis suggested a repeated measures one-way analysis of variance model to test its null hypothesis.

With selection, across groups

This hypothesis is based on the assumption that, to reiterate, *choice* of specialisation would be associated with *congruency of selection* (both in terms of Study Approach). That is, the first mentioned association *reflects* (or intensifies/reduces as the case may be) the second mentioned association. The hypothesis relates to the anticipated differences in mean Study Approach scores *across* the four groups SS, SA, AS and AA.

Differences between a number of means that the null hypothesis addresses itself suggests that the statistical procedure of variance analysis (ANOVA) is involved in the testing of it. Further, as only a single classification is involved (that of selection congruency), a One-way Analysis of Variance is indicated. This is the second one-way analysis of variance suggested thus far.

An analysis of variance model for testing null hypotheses 3.1, 3.2 and 3.3

The analysis of the two null hypotheses 3.1 and 3.3 entails two one-way analyses of variance. On the other hand, the analysis of null hypothesis 3.2 entails a repeated measure variance model.

However, it appeared possible to combine the analyses of these three null hypotheses in a single factorial analysis of variance model. Such a model is called a Mixed (or split-plot) Model (Winer, 1991; p.509). This possibility enables the analyses of the null hypotheses 3.1, 3.2 and 3.3 in a Two Factor Mixed Factorial Design which may be denoted by A x (B) whereby it means repeated measures on factor B. A represents the between-groups factor. In the present investigation B represents the measurements of Study Approach over time with two levels and A the different congruency selection student groups SS, SA, AS and AA with four levels. Substituting these values gives the factorial design 4 x (2) for the present investigation.

In this model, if there were a significant main effect across (B) the two measures *and* a significant interaction with A (groups) then *post hoc* tests on individual groups over time would tell whether changes are significant. However an interaction should exist to proceed to the latter stage. A feature in this model should be noted. In mixed experiments, it is within-subject factors that are generally of principal interest (here over time). Simple effects of between factors can be tested by performing one-way ANOVAS on the data at selected levels of within-subjects factors.

The combination of variance analyses in a factorial design is more statistically effective than adopting several separate one-way analyses of variance has been pointed out by Black (1999; p. 487). Results are presented first for the Deep Study Approach, followed by those with respect of the Surface Study Approach.

DEEP STUDY APPROACH RESULTS

The data to test the hypotheses of the three hypotheses 3.1, 3.2 and 3.3 are presented in Table 9.

Table 9 : means and standard deviations of deep study approach scores.

Congruency of Selection	O ₁ (at choice)	O ₂ (with selection)
Congr. Science	25.13	25.07
SS (n=739)	(3.56)	(3.44)
Incongr. Science	24.70	24.88
SA (n=169)	(3.51)	(4.46)
Incongr. Arts	23.53	23.62
AS (n=103)	(3.82)	(4.33)
Congr. Arts	23.48	23.29
AA (n=345)	(4.15)	(4.05)
Tol.	24.53	24.49
(n=1356)	(3.80)	(3.76)

With respect to null hypothesis of Hypothesis 3.1, Table 9 shows that the means are different across the four congruency selection groups SS, SA, AS and AA. The two Science choice groups (SS and SA) both have higher Deep Study Approach scores than the two Arts choice groups (AS and AA). Thus the association between choice of specialisation and Deep Study Approach observed in the general sample is still observable at this stage, with respect to these (choice) groups to undergo selection.

The over time mean difference is slight (Hypothesis 3.2 data), being 24.53 and 24.49, registering a decline with respect to this Study Approach. Data presented in Column 3 of Table 9 (to test hypothesis 3.3) show that the means are different from each other.

To know the significance of data one must examine the results of the Mixed Design Model variance analysis. The results of the application of this model are reported separately as between-subjects effects and within-subjects effects. The former is of theoretical interest only. The latter relates to null hypothesis of hypothesis 3.2. Regarding analyses relevant to null hypotheses to Hypotheses 3.1 and 3.3, separate one-way analyses have to be performed in this Mixed Model Design.

Statistical Analysis of Null Hypotheses in the Mixed Model Variance Analysis

Statistical analysis relating to null hypothesis 3.1 (Deep Study Approach): One-way analysis of variance at choice

One way analysis of variance with deep study approach (at choice) as the dependent variable and congruency selection as the independent variable gave the following result: that there was an overall difference between the groups SS, SA, AS and AA in deep study approach at choice. The results of the analysis are summarised in Table 6.6. The expected overall difference has been confirmed by the significant F-ratio obtained.

Table 10: Summary of the one-way analysis of variance results on the data in column 2 (at choice) of Table 9 (Deep Study Approach)

Source of variation	SS	df	MS	F	Sig.
Between groups	751.285	3	250.428	17.979	p<.0001
Within groups	18832.221	1352	13.929		
Total	19583.506	1355			

Following the finding of a significant F-ratio there are a number of possible *post hoc* tests. For present investigation the moderately liberal Newman-Keuls procedure has been chosen for the comparison of the means, as this is an exploratory study. In this computation the means are arranged in descending order. Thus:

SS	SA	AS	AA
25.07	24.07	23.53	23.29

Application of the Newman-Keuls procedure showed the following significant differences ($p < .05$).

- between SS and AA
- between SS and AS
- between SA and AA

Thus there is no difference between SS and SA (same population), AS and AA is also in the same population, but there is a difference in SS and AA. SA and AS belong to the population for this trait. What this means is these differences across groups was apparent in whole sample, is now less.

Statistical analysis of data relating to the null hypothesis of Hypothesis 3.2 (Within-subjects analysis).

This null hypothesis states that the mean of deep study approach scores O₁ will not be different from that of the mean of deep study approach scores O₂ over time, at each level of the between-subjects factors.

The descriptive statistics relating to the null hypothesis were presented earlier in Table 9 from which we see that the overall Deep Study Approach mean scores across time (O₁= 24.53 and O₂= 24.49) are not very different from each other. There is also a slight reduction of this Study Approach over time. Application of this model (Mixed Design Model) provides, with respect to the null hypothesis to Hypothesis 3.2, an analysis of variance of the Within-subjects Effects. The results of this statistical analysis are summarised in Table 11.

Table 11: Tests of Within - Subject Effects (Deep Study Approach)

Source of variation	SS	df	MS	F	Sig.
Over time-Context (B)	.01	1	.01	.002	p<.967
Overtime (B)x Congruency selection (A)	8.65	3	2.88	.350	p<.792
Error (Over time)	11254.29	1352	8.32		

The non significant *F*-ratio of .002 ($p < .967$, $\alpha = .05$) led to the acceptance of the null hypothesis and state that there is no overall difference in deep study approach over the time factor relating to General Education and A-level specialisation. However to probe simple main effects of the within-subjects factor at the various levels of the between-subjects factor, a significant interaction appears necessary in this Mixed Design. However, the interaction here is not significant. Hence the analysis should end at this stage. Thus for four research questions which could be asked whether there would be a

difference in the Deep Study Approach across time the answer would be no. This would be not only for the overall change over time but also for the separate groups (SS, SA, AS and AA) over time.

One would note that the Columns 2 and 3 in Table 9 have remained relatively static at the various levels of the between-subjects factor (SS, SA, AS and AA).

Statistical analysis relating to null hypothesis of Hypothesis 3.3 (deep study approach): One-way analysis of variance at selection

The results of the one way analysis of variance at within-subjects level O₂ (at selection) are summarised in Table 12.

Table 12 : Summary of the one-way analysis of variance results on the data in Column 3 (with selection) of Table 6.7 (Deep Study approach)

Source of variation	SS	df	MS	F	Sig.
Between groups	851.770	3	283.923	20.998	p<.0001
Within groups	18280.935	1352	13.521		
Total	19132.705	1355			

As the F-ratio is significant, as *post hoc* tests for detecting differences between the four means (as previously) the Student-Newman-Keuls procedure was adopted. First the means were arranged in descending order:

SS	SA	AS	AA
25.07	24.88	23.62	23.29

Application of the this procedure showed the following significant differences ($p < .05$).

- between SS and AA
- between SS and AS
- between SA and AA

Thus there is no difference between SS and SA (same population), AS and AA are also in the same population. SA and AS are also coming from the same population. What this means is that from what was at choice this has not changed with selection over time with respect to the deep study approach. This comparison, however crude, is between choice and selection as tested by the null hypotheses to Hypotheses 3.1 and 3.3 respectively. What of the findings with selection itself? The SS and SA groups are not different in their use of Deep Study Approach.

The same conclusion should be arrived at with respect to the two groups AS and AA. They are also coming from a common population, differential selection has not brought a difference. The findings in the cross-sectional study here to are not reflected. For both these occasions one could argue for persistence of the deep study Approach. The coming together of SA and AS in the Venn diagram to be considered to be in the same population is interesting. These two groups differ in both choice and selection. This might be the reason for it. However these two groups were not different at choice either, as shown in the earlier analysis. Hence the status quo was maintained. On the one hand the effect of selection may have been made ineffective. On the other hand, selection itself may have been ineffective in offering the students their choices. What the results show is that the relevant research question was not answered in the affirmative.

Surface study approach

Next, the null hypotheses to the Hypotheses were probed with respect to the Surface Study Approach.

The descriptive statistics relevant to the testing of these three null hypotheses (3.1, 3.2 and 3.3) are presented in Table 9.

The relevant mean surface study approach scores across the groups SS, SA, AS and AA to test the null hypothesis 3.1 is contained in Column 2 of Table 13. That is, at choice.

The data relevant to test the null hypothesis to Hypothesis 3.2 is contained in the Columns 2 and 3. The data relevant to test null hypothesis to Hypothesis 3.3 (for surface study approach) is contained in Column 3.

Table 13 : Means and standard deviations for Surface Study Approach raw scores

Congruency of Selection	O₁(at choice)	O₂ (with selection)
Congr. Science SS (n=739)	15.65 (3.79)	16.41 (3.84)
Incongr. Science SA (n=169)	16.13 (3.82)	16.58 (3.79)
Incongr. Arts AS (n=103)	16.62 (4.11)	17.30 (3.46)
Congr. Arts AA (n=345)	16.53 (3.99)	16.81 (4.01)
Total (n=1356)	16.01 (3.89)	16.60 (3.85)

One-way analysis of variance to test hypothesis (3.1): Mean differences at choice (Surface Study Approach)

Table 14 provides a summary of the analysis of variance. The significant F-ratio was followed by the application of the Student-Newman-Keuls procedure in the post hoc analysis. Of the mean differences. When the means were placed in descending order with the associated group the result was:

AS	AA	SA	SS
16.62	16.53	16.13	15.65

The application of the Student-Newman-Keuls procedure resulted in only one pair of means being significantly different ($\alpha = .05$) from each other out of the six pair-wise comparisons made. The pair of means AA and SS was the only significantly different one.

Hence AA, AS and SA belong to the same population, SS, SA and AS belong to the same population. The only difference is between AA and SS, the congruency selection groups, for the Surface Study Approach at choice. Here, congruency is associated with identifiable differences. Thus on the whole the groups are similar, and consistency of differences across groups are not apparent as it was in the whole sample and still less compared to the Deep Study Approach.

Table 14 : Summary of the one-way analysis of variance results on the data in column 2 (at choice) of Table 13 (Surface Study Approach)

Source of variation	SS	df	MS	F	Sig.
Between groups	231.448	3	77.149	5.147	p<.002
Within groups	20265.463	1352	14.898		
Total	20496.911	1355			

Within-subjects analysis (Hypothesis 3.2): Surface Study Approach

The summary of this analysis is presented in Table 15.

Table 15 : Tests of Within-Subject Effects (Surface Study Approach)

Source of variation	SS	df	MS	F	Sig.
Over time-Context (B)	118.07	1	8.07	11.50	p<.001
Overtime(B)xCongruencyselection	30.06	3	0.02	0.98	p<.403
Error (Over time)	11254.29	1352	8.32		

The main effect of over time factor is, in this case, significant. The *F*-value is 11.50 ($p < .001$, $\alpha = .05$). But as the interaction is non-significant ($F = .98$, $p < .403$, $\alpha = .05$), the Mixed Design Model does not permit simple main effects tests at the various levels of the between subject factors. The overall within-subjects difference over time that was significant tells us that there was an overall change across time in the use of surface approach, one that did not differ across the four groups.

One-way analysis of variance to test hypothesis (3.3): Mean differences at selection (Surface Study Approach)

The descriptive statistics relevant to test the null hypothesis is contained in Column 3 of Table 9. The results of this analysis are summarised in Table 16. It was a one-way analysis of variance.

Table 16 : Summary of the one-way analysis of variance results on the data in column 3 (with selection) of Table 6.9 (surface study approach)

Source of variation	SS	df	MS	F	Sig.
Between groups	91.999	3	30.666	2.071	p<.102
Within groups	20015.160	1352			
Total	20107.159				

The obtained non-significant F-ratio indicates that there is no overall difference between the means of the four groups SS, SA, AS and AA in the Surface Study Approach. Hence further examination, pair-wise examination of the means, is not appropriate.

Comparing the two situations of choice and (with) selection, what this appears to mean is that selection has been unable to bring about a change from what was there even at choice. The difference with selection is even less than what was at choice. Perhaps a change or changes in an unexpected direction took place. If so it would be observable in a within-subjects analysis.

Interpretation of results

Introduction

Studies have shown that preference for specific teaching environments are associated with certain study approach orientations (Entwistle and Tait, 1990), giving support for the influence of *person* on use of study approach. The overall aim of this study was to explore the possible contribution of *context* to the use of different study approaches by students, as opposed to the impact of the person. Consequently, the original research question asked whether there would be change in intensity of use of study approach by students over time depending on whether their A-level specialisation (Arts or Science) was the same as their choice at O-level (congruent) or not the same (incongruent), the *context*. It was hypothesised that, over time, study approaches would be

- intensified with congruent specialisation and,
- weakened with incongruent specialisation.

In essence, these two conditions provided contrasting natural contexts for the students. Before resolving these hypotheses, it was seen as necessary to consider other conditions at the initial O-level stage. The students were divided into two groups according to expressed choice of A-levels. Associations

were found between *choice* of subsequent specialisation and study approach (Entwistle's), as follows:

- students whose choice was Science had higher deep study approach scores than students whose choice was Arts and,
- students whose choice was Arts had higher surface study approach scores than students whose choice was Science

Since the question aimed to explore the possible impact of *context* on use of study approach, this use was tested not only at the end of O-levels, but also after they had been in their specialisation subject for 9 months. Based on the above associations, it was expected that students whose choice was Science would increase their deep study approach scores when the selected subject at A-level was congruent (i.e., Science specialisation). It was also expected that the students whose choice was Science would have their deep study approach scores reduced by incongruent specialisation (i.e., Arts subjects). Similarly students whose choice was Arts were expected to intensify their surface study approach scores when their specialisation was Arts (congruent) and to be reduced if specialisation was in Science (incongruent).

Summary of findings

Initially, characteristics of students were investigated before addressing the main research questions.

Preliminary findings

The investigation found that choice for Arts/Science subject disciplines was associated with surface and deep study approaches respectively, with Arts choosing students having a higher surface mean study score and a lower deep study approach score, and Science choosing students having a higher deep study approach score a lower surface study approach score. These findings are not consistent with studies which tend to show associations

between specific subjects or subject areas and use of deep or surface study approaches (e.g., Entwistle and Kozeki, 1985).

Main findings

These findings may be presented under the headings indicated below. Contrary to the above mentioned expectations:

(1) Across time

There was an overall significant difference across time (9 months) for the surface study approach (but not for the deep study approach), though no one group could be found to have a significant change over time as there was no significant interaction between subject groups and time.

This means that the congruent selection groups are not associated with change in intensity of study approaches from what they had at choice, whereas intensification had been expected. Like-wise, the incongruent selection situations have not resulted in reductions in the study approaches.

The results obtained here were found through a within-subjects analysis. In this repeated measures design, it should be noted that it is the difference in each pair of related means that is of interest, not the overall difference over time. The access to the analysis of the difference in a pair of related means is provided only by a significant interaction between the various levels of subject groups and time. This interaction was not present with respect to both study approach analyses.

Two further analyses were made, two one-way analyses of variance: one with the scores of study approach at choice at O-level and the other after 9 months at selection. Choice of subjects Arts or Science specialisation at O-level were associated with intensity of a study approach as mentioned earlier. What happened at selection, is more related to the overall change discussed in the previous section, since it relates to the impact of the *context* on study

approach these being Arts or Science (actual) specialisation courses. Therefore, the results of the analysis of the study approach scores at selection are discussed in detail.

(2) Differences at Selection

After 9 months (of selection) there were still differences between the pair of groups: **SS-AA**, i.e., between the two congruent selection situations, for the deep study approach but not for the surface study approach.

Thus for the deep study approach, the difference between this pair of groups remained unchanged. The results of the one-way analysis of variance here helps to explain that the non-observance of an overall difference across time for the deep study approach is *not* due to one group's increase (SS) being counterbalanced by the other's decrease (AA) in which case there would not have been a difference between SS and AA which was not, but rather by the deep study approach, as said earlier, remaining the same. Put another way, we see a significant difference (SS-AA) with no increase in magnitude for the deep study approach. The same argument, i.e., of no change in study approach, is applicable to the pair of incongruent groups (SA and AS) as there was no difference between the two groups at selection as was the case also at choice. Thus neither congruent nor incongruent context has made an impact with respect to deep study approach for all the groups.

However, when considering the size of the surface study approach across the four groups after nine months, there is *now* no difference. What is seen is that the differences that were observed at choice no longer exist. Hence the only change to be inferred is an increase in surface study approach for all groups, congruent and incongruent. In previous studies (e.g., Watkins *et al.*, 1986) deep study approach had not changed over time, but there has been a *reduction* in surface study approach.

If explained in terms of previous associations (at O-level) then the former mentioned finding indicates that the association between subjects and study approach has been maintained for the deep study approach whilst it has weakened for the surface study approach. The latter was not what was expected in the circumstances (surface study approach in congruent selection conditions). What was expected was an increase in this surface study for AA but a reduction for SS (for the association to hold). What has really happened is no discernible change of this study approach at SS, that is, a reduction of surface study approach (see Table 13).

Conclusions

Subject Disciplines and Study Approaches

In the present investigation it was found that Science choice students had higher deep study approach scores than Arts choice students. The inverse relationship prevailed with respect to the surface study approach. In a study (Entwistle and Kozeki, 1985) directly comparable (using a similar instrument) to the present one employing British and Hungarian pupils, attainment in both Arts and Science was positively correlated with deep study approach while being negatively correlated with surface study approach. As these would be the expected relationships of the study approaches with subject attainment in Arts *or* Science the present study's relationships of study approaches and choice of subjects *vis-s vis* the attainment in subjects could be explained by the composition of the subjects groups (Arts/Science) in Sri Lanka. As indicated above high subject attainment is connected with deep study approach. In Sri Lanka, however, high attainers tend more to be Science students and more Arts students tend to be low attainers. Therefore Science students should have high deep study approach scores and low surface study scores whereas Arts students should have high surface and low deep study approach scores. The validity of this explanation rests on the levels of attainments of these two groups where it was seen that Science choice students in the present sample had a significantly greater subject attainment level than the Arts choice students.

Study approaches across groups

There are several possible reasons for finding no difference across the four groups in the surface study approach mean scores after 9 months at A-level while there was an overall increase in surface approach over time. One might be that there was no difference in teaching style in any of these specialisations that might differentially influence the students. Thus in *both* Arts and Science at A-level, learning of facts and memorisation may have been equally stressed. Thus the classroom context could have influenced student use of study skills.

Intensification and reduction of surface study approach across time

There could be many explanations for finding no intensification (in congruent conditions) or reduction (in incongruent conditions) for the study approaches over time. One would be the short length of time over which the operation of selection took place. On the other hand, maybe the contexts were not as different for the students as originally expected. Again, if A-level classrooms only emphasise memorisation regardless of subjects, then this might explain why the only increase was overall intensity of use of surface approach.

Alternatively, the significant overall increase over time in this study approach at A-level (whereas the deep study approach remained unchanged) could be explained by the students being anxious in the new learning situation of A-level specialisation. Therefore they adopted, as a safeguard to approach in response, an enhanced application of surface study approach as a 'coping strategy'. This may go towards explaining the significant increase in the mean score in this study approach at A-level and presupposes that the students had not adapted themselves after nearly one year into A-level specialisation. In earlier studies, such anxiety has been associated with the surface study approach (Fransson, 1977).

Other factors may have influenced the failure to show intensification or weakening of association with selection. One relates to the choice made by the students: was it an informed one or not? In the intense competition prevailing in the education system in Sri Lanka, there is always the possibility of students making choices for ill-informed reasons. Perhaps this may be such an occasion. Thus, some students may have chosen science for potential employment reasons, for example, rather than because they liked the subjects. Another explanation that may be advanced in respect of change is from the students' point of view: their expectations of the different subject streams were not being met. If this existed, it would lead to loss of motivation even within congruent groups.

Overall, there appears to be several possible known extraneous variables whose control would be difficult in the complex learning environment. There would need to be further investigations, predominantly qualitative, to determine the nature of their influence.

Lack of change in deep study approach

As there was no evidence of change within groups over time (as well as overall) for the deep study approach, this strongly suggests that context had no effect on this study approach. However, the failure for the deep study approach to show differences is possibly due to the ceiling-effect observed in the distribution of scores at the inception, thereby rendering it less likely increases in later measurements would be detectable.

Other investigations of persistence and change in study approach appear to be few. When present, the apparently parallel labels of consistency and variability are the ones often used. To be comparable to the present investigation these studies, strictly speaking, would need to be longitudinal in nature. The findings in such studies that studied variability of study approach are mixed. These have measured study approaches of the same students following different courses (e.g., Eley, 1992). The reasons adduced for when

there is lack of change are much the same: too much similarity in the different courses and too short the period of time of contextual influence.

Other studies of a longitudinal nature appear to have observed changes in study approaches over time with respect to the same learning context, that is, for the same first year university courses. As such, these may better be regarded as developmental studies rather than those of variability (e.g., Vermetten *et al.*, 1999b; Watkin and Hattie, 1985; Watkin *et al.* (1986).

However, the present investigation is different from all others in probing *nature of change* of study approaches. In this endeavour, use was made of the basic concept choice and subsequent selections (context), largely unused in similar circumstances in past research.

The present study investigated the consequences of a change in subject matter taught not just time in the same class. The study had a baseline from which to compare, at least theoretically, so that any increase or a decrease that could be identified.

Critical analysis of methodology

A critical analysis of the methodology adopted can be considered from two aspects, its strengths and weaknesses.

Strengths

The Study Approach inventory (SSWI, KE3) was translated into Sinhalese language by an experienced teacher and expert translator who on an earlier research occasion had successfully translated the version used in the last mentioned study. However the investigator checked the validity of the instrument by translating it back into English and where changes in the Sinhalese translation were considered necessary these were attended to by the translator.

To reduce any possible bias in the responses, the full questionnaire of 60-items was used in the investigation to hide the intent to focus on only two aspects. The scores of responses to only 12-items (six for each of the two study approaches deep and surface) were ultimately used in the investigation.

A purposive sample of students was used in this investigation because earlier research (Biggs, 1985) had indicated that this type of questionnaire was more suitable for students high in both memory and reasoning scores. Earlier experience with a close questionnaire had shown that less able students tended to leave the questionnaire incompletely finished. This was not a risk that was wanted in this longitudinal study. This led to the random selection of the sample of 11 schools from 18 relatively academically inclined schools in the easily accessible urban areas. Such schools in urban areas in Sri Lanka have a large proportion of O-level students entering the A-level classes (Perera, 1988). Hence the sampling method adopted served two functions, ensuring construct validity in the instrument and retention of the sample in the system for the second testing.

To have adequate representation of student numbers in the four A-level groups, the decision was taken at the start of the investigation to select a sufficiently large to ensure each group was viable. As a consequence, the smallest group was more than adequate (109) for the investigation.

No problems were encountered during the administration of the translated questionnaire. On some occasions comments were encouraged from the students. Students appeared to have responded with understanding to the items as there were no complaints regarding these. A similar situation prevailed when a close version of the questionnaire (that used in the Entwistle and Kozeki (1985) study) was administered on an earlier occasion following a pilot study.

Perceived weaknesses and limitations of the study

First, there was the possibility that the administering of the instrument by the investigator would lead to experimenter effect because the students would want to please the outside investigator. The investigator administered the questionnaire in some of the classes in school, whilst a postgraduate education student trained by the investigator for this purpose administered the questionnaire in the rest of the classes of the same school. The number of classes tested in a school ranged from 5 to 9 in most of the schools. The same procedure was followed by the trained assistant. The possibility existed that because it was their study habits that were being investigated, student responses would indicate what they knew to be good approaches, but not necessarily what they did themselves. This could have been due to an outsider administering the test, while their own teacher (who was due to teaching them at the time of testing), might not have generated such a reaction.

Alternatively, the questionnaire could have been left in a neutral place like on a classroom desk for collection and later completion. The cultural features of Sri Lanka and the longitudinal nature of the study ruled out this option. Whilst some teachers in Sri Lanka like to give a questionnaire themselves, all teachers are not equally enthusiastic. Also, there would be a greater danger that they simply would not be collected and/or completed correctly. Hence the existing procedure of administering the questionnaire had the added advantage of the instructions being thoroughly understood and was adopted.

As the deep study approach at the first testing showed a ceiling effect in the distribution of its scores, the change of context does not allow for easy change in its measurement level. This would be for both directions, a potential increase or decrease. Hence the manifestation of a potential change was denied by the ceiling effect.

Another limitation of the study was the non-pursuance of possible gender effects. As the investigation was an exploratory study in a new cultural

milieu, it was thought sufficient to restrict it to variables of utmost importance in the investigation.

As the possibility existed that decisions that these students made may have been influenced by parental and social pressure in Sri Lanka, their 'choice' of A-level specialisation may also mean the result of operation of other influences as well and not choice alone. For example, prospects in the job market identified as suitable for them by the parents. Anticipating this, an item in the Short Questionnaire (Item No. 6) asked specifically whether it was their own decision, their parents or ideas of others. As more than 99% of the students stated that it was their own choice, further analysis relating to it was not taken-up. Hence contrary to expectations, this potential limitation did not seem to be present in the sample.

A factor that the researcher has to be guard in a longitudinal study like this is that of confounding of results by maturation. However maturation effects appear capable of being ruled out in the present investigation as all groups were of the same age, thereby any one group not being different in age to another to confound the obtained results by maturation. Anyhow, the raw scores did not increase over time with deep study approach and the increase in the surface study approach was in the opposite direction, increasing rather than decreasing with age. The latter cannot be justifiably defended in terms of greater maturity.

Another reason for the hypotheses not being supported is that choice was not functional as was intended, i.e., one that was expressed with freedom and without constraints. This would be the cultural factor, meriting research by itself, since both choice and ultimate selection could be influenced by such factors as employment prospects and family pressure.

The nature and implementation of the curriculum of A-level Arts and Science Mentioning the nature and implementation of the curriculum of A-level Arts and Science is relevant. Two possibilities arise in this situation.

One is that the Arts and Science A-level curricula are not 'different' in their delivery, i.e. classes were mostly lectures. The other is even when the subjects at A-level are different, how they are taught (i.e., what type of study approach is encouraged through homework) is not, leading to similar deep study approaches in both Arts and Science specialisation.

Sampling, statistics and instrument

There were some limitations in the investigation that were specially associated with the above mentioned.

The sample sizes of the congruent and incongruent selection groups differed to a relatively large extent which was not anticipated.

The surface study approach scale of the Study Approach Instrument used (School and School Work Inventory, SSWI, KE3) had a low reliability. This would confer in turn lower power of the statistical tests used, in other words lowering the probability of finding significant differences when they existed. The KE3 version may have not being the most suitable instrument in the context of Sri Lanka due to the use of some activities as examples that were not common in schools.

If there was a question regarding the outcome of the present investigation, it was with respect to the surface study approach. In this investigation it may arise because of the relatively low reliability of the instrument observed. In the past research the question related to it appears to have mainly been one of consistency of the loading of the components in the Reproducing Orientation dimension on a single factor, and not on the surface approach itself. Alternatively, other instruments (e.g., Learning Process Questionnaire, LPQ) has encountered this problem in the norming sample itself Watkins *et al.*, 1986

High scores were obtained by students on the deep study approach instrument at choice that resulted in a ceiling effect. Thus any increases with

congruent selection would have been difficult to detect. This may be attributed to experimenter presence or wording of questions.

The duration of specialised study at A-level may have been uneven in the schools given the localised disturbances in Sri Lanka. The study was limited to areas where the predominant use of language was Sinhalese rather than being fully representative of the different geographical areas of Sri Lanka.

The present study employed largely an urban population to safeguard theoretical pronouncements and sample mortality, but it did exclude rural students. As a consequence, if such a study were replicated, it is recommended that employing a wider population of students than the one used in the present investigation.

Recommendations for future research/action

If students just entering A/L classes are subjected to stress leading to increased use of surface study approach as a coping strategy, the teaching styles at this juncture should be accordingly adjusted, with the aim of reducing this state of mind. This would need a more differentiated (rather than a general learning of teaching methodology embedded in teacher training programs) to suit a variety of situations. As a first step, interview data gathered from recent entrants to A-level could be collected to confirm or otherwise this state of mind.

As the alternate possibility existed that at A-level the teaching *itself* is memorisation directed, a different course for future research would be to investigate study approaches at O and A levels of the GCE to find a difference in practice as has been done in related studies (e.g., Eklund-Myrskog and Claes-Goran, 1999; Zeegers, 2001).

An over emphasis on individual differences in learning has been the subject of recent criticism (Lingbiao and Watkins, 2001). Even when individual differences are pursued, their scope of interactions with general conditions

do not appear to be fully utilised (Riding and Rayner, 1998). On a practical note, does not the emphasis of individual differences in learning to the detriment of general laws of learning miss out information that the teacher can more easily put to use in the learning situation?

Returning to the present study, 'composite' individual differences in the process of learning constructs appear to have a short 'life-time'. Thus the literature review showed that in the Chinese culture the memorisation component of surface study approach separates from the rest of its components. This appears to suggest that a return to a study of discrete 'skills' is yet a viable option. For example, a surface approach may contain many discrete elements such as 'not fully reading the instructions' which may be meaningfully pursued independently of other components.

Though available evidence (Lai, 1989; in Kember and Gow, 1990) and personal experience of Sri Lanka schools justified the use of the ASI (school version) in the present investigation, a more thorough examination of the mutual exclusiveness of memorisation and understanding for a valid use of the instrument should be a concern for future research. This is because the Chinese cultural heritage of combining memorisation with understanding in learning may have a general effect in the Asian region including that of Sri Lanka. Confucianism in Chinese culture is also linked with Buddhism which is the predominant religion in Sri Lanka. In truth, however, whereas Chinese culture escaped Western domination, that of Sri Lanka witnessed several waves of Western influence and its school system is still mainly an inheritance of the West (Jayaweera, 1986).

Whilst this argument also lent support to the usage of the instrument in the present investigation, additional support for the *present* context being important came from a study by Biggs (1991) that found Chinese students were higher on rote and lower on meaningful, learning approaches. The Chinese students were in a highly traditional medical school in Hong Kong in which rote learning of technical terms was emphasised, while Western

students were in the most learner-friendly of environments, problem-based learning, in Australia. Whilst this study gives other comparisons some validity, i.e., understanding is combined with memorisation in China (as previous studies have tested Chinese students either in China or Australia in learning situations associated with promoting understanding), direct information relating to the mutual exclusiveness or otherwise of understanding and memorisation in the Sri Lanka educational context still appears desirable as it affects the transferability of this dichotomy to this country.

The starting point in such situations as undertaken once by Marton *et al.*, (1996) appears to be to examine the conceptions of learning in Sri Lanka. In this endeavour, repetitive behaviour should not be mistaken for rote learning as Confucianism advocate withholding criticism until one fully understands the other's point, or as On (1996) quotes Chu(1990) in Zhu (1992):

'Generally speaking, in reading, we must first become intimately familiar with the text so that its words seem to come out of our mouth. We should then continue to reflect on it so that its ideas seem to come from our own minds...(Chu, 1990, p.135).

While the present study of this thesis resolves the stated hypotheses, it also raises a number of issues that could lead to additional research:

- * A new study that includes comparison with a Western sample using the same concepts (deep and surface study approaches and choice) as these may differ in the meaning attached to from culture to culture. In which case, especially with respect choice, the research design may require modification to examine whether study approaches are subject to change, i.e., alternate concepts to choice. However, the researcher must be on guard against possible 'macro' nature of this kind of variable.¹
- * A question that could be asked, based on the investigation's finding but however seeking verification is: Does A-level teaching and learning

for all subjects only encourage surface approach, in Sri Lanka? And if so, why?

The answer to these questions would be of considerable interest to educational planners and curriculum developers in Sri Lanka, and would have a direct bearing on both curriculum development and teacher education.

Summary

Most of the expectations stated in the research question and hypotheses were not found, though a relationship between choice for Arts or Science subjects in the two curricula of O-level and A-level and study approach (deep and surface) was established. Therefore, it could be said that the context as defined here (congruent and not congruent) made no difference. The only significant context effect was an overall slight increase surface approach for everyone. Preference for Arts/Science subjects at O-level was measured only to find out at the outset whether the intended investigation was a viable one as the study approaches were to be later measured at A-level in relationship to similar subject areas.

The study approaches were generally found to be stable and persistent within the context of the present investigation. The nature of change of the surface approach (in the direction of greater surface approach) should be a concern for educators in Sri Lanka, as it may be the result of teaching approaches at A-level or may be due to surface approach employed as a coping device by students in the early stage of the A/L situation.

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APPENDIX A

Table 1 : Items selected from the School and School Wok Inventory (KE3):

Meaning Orientation

Item No.	<i>Deep Approach (Cronbach Alpha= 0.66)</i>	Item-scale total correlation
1	I try to relate ideas in one subject to those in others, whenever possible.	0.62
11	I generally try to understand new topics by working on the ideas out by myself.	0.63
21	Often I ask myself questions about things I hear in lessons or read in book.	0.61
31	I try to relate what I read to previous work.	0.60
41	I prefer to make my own notes when I can.	0.53
51	In trying to understand new ideas, I often try to relate them to real-life situations.	0.56
(n=200)*		

* a sub-sample

APPENDIX A

Table 1 :Items selected from the School and School Wok Inventory (KE3):

Reproducing Orientation

Item No.	Deep Approach (Cronbach Alpha= 0.66)	Item-scale total correclation
4	I find I have to rely on memorising a good deal of what we have to learn.	0.44
14	I don't usually have time to think about the implications of what I have read.	0.53
24	The best way for me to understand what technical terms mean is to remember just the text-book definition.	0.44
34	I like to be told precisely what to do in essays or other set work.	0.11
44	I make my own notes only when my teacher tells me to.	0.50
54	Generally I read only what we are specifically told to read.	0.48

(n=200)*

*a sub-sample

APPENDIX B

Table 1: The matrix of intercorrelations of the variables deep study approach, surface study approach and academic achievement (OL Grades) in the entire sample of the longitudinal study (all the groups)

	Deep	Surface	Deep12	Surface12	OL Exam. Grades
Deep	1.0000	-0.2000**	0.4182**	-0.1943**	0.2157**
Surface	-0.2000**	1.0000	-0.1269**	0.3149**	-0.1416**
Deep12	0.4182**	-0.1269**	1.0000	-0.2371**	0.2215**
Surface12	-0.1943**	0.3149**	-0.2371**	1.0000	-0.0355
OL Grades	0.2157**	-0.1416**	0.2215**	-0.0355	1.0000

(n=1356, except for OL Exam. Grades where n=1322 as results of 4 students could not be known)

**p<.001

n.s.: non-significant

Deep: First measurement of deep study approach (at OL)

Deep12: Second measurement of deep study approach (at AL)

Surface: First measurement of surface study approach (at OL)

Surface12: Second measurement of deep study approach (at AL)

OL Exam. Grades: OL Exam. Grades of the eight subjects converted to marks and totalled. A (Distinction)=4 marks, B (Credit pass)=3 marks, C (Pass)=2 marks and D(fail)=1 mark). In this sample, students had passed in all the eight subjects in the General Education curriculum.

Table 2: t -test for independent samples of A-L choice and O-L attainment

	Choice is Arts	Choice is Science
\bar{x}	25.72	28.45
SD	3.41	3.11
n	438	884

$t=14.55$ ($df=1320$), $p < .001$

OL Exam. attainment: OL Grades of the eight subjects converted to marks and totalled. The following marks were awarded for the Grades:

A=4 marks, B=3 marks, C=2 marks and D(fail)=1 mark.

The grades are explained in the page containing Table 1 in this Appendix (B).

Parents and Community Involvement: Success Factors for Female Primary Education

Mubasher Nadeem, Associate Professor (English), University of Education
Lower Mall Campus, Lahore

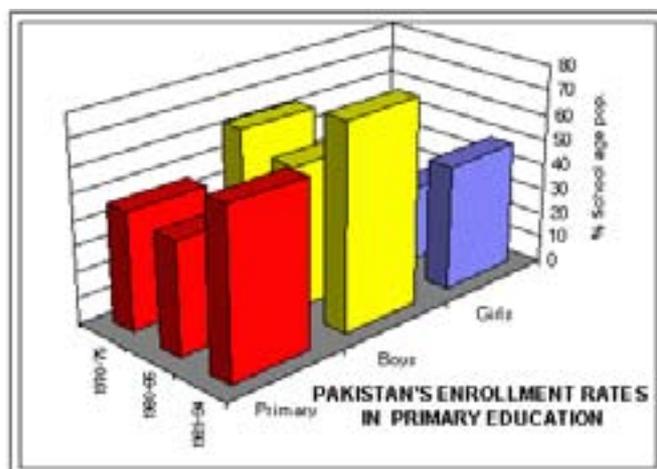
ABSTRACT

The study aimed to find out the success factors responsible for the increase of female primary education and determined to what extent the involvement of parents, especially mothers, and community is important for the enhancement of female primary education. Female child labor at home has been one of the hottest issues in intellectual debates in Pakistan, which is prevalent in our society because of economic exigencies affecting female primary education. There have been efforts to improve female literacy rate by focusing primary education, and with the help and assistance of international community though government is extending various incentives to girls so that their parents send them to schools, these measures are not producing the required results because of the lack of active parental and community involvement in enhancing female primary education. The study focused fifty rural families in light of the interview comprising questions related to the field of education and reflects that economic instability and families' pressure to stick to the family traditions, distance to the schools, gender of the teachers, and lack of security seem to be key hurdles in the improvement of female primary education. The findings of the qualitative data suggest that female primary education can be improved by involving families, especially mothers, and local communities, which have direct liaison with day today social needs. It further recommends that parents may be called upon to increase their involvement in the process of educating their female children by providing adequate follow up to academic learning at school and at home as well as communities to have feeling of ownership of national education policy that guarantees success in education sector.

Introduction

Women are more than half of the population of Pakistan and need to play their due role in national development by having the same opportunities available to their opposite gender. Pakistan being a closed society has had many ups and downs in improving the conditions of women since its independence. According to the recent statistics, nearly 50 million people, half of the adult population, are unable to read. Male literacy is 63%, which is much higher than female literacy i.e. 36%; the disparity is more visible in rural areas i.e. 57.8% for men and 29% for women. The main causes that keep children out of education are: access to education, teacher absenteeism, low quality of education, poverty combined with education not perceived to provide economic gains, traditional style of teaching, corporal punishment, and high student teacher ratio (Partnership for education, ¶ 1).

Up to the end of the last century, Pakistan's enrollment rates in primary education, both of boys and girls show a bit grim picture of female early education.



(Universal Primary Education Within Pakistan's Reach in Next Decade)

According to the World Bank report on 'Improving Basic Education in Pakistan' Pakistan's education gender gap, though improving, still persists. The number of girls in primary school remains far less than the number of boys, and this gap is large when compared with the gaps in neighboring countries. Governments accept the responsibility of financing primary education due to the high social returns, particularly for girls. Although girls' attendance is fragile, worldwide research shows clearly that the social returns to female basic education are very high. Education for girls or boys boosts productivity and earning capability, but education for girls has a much greater impact on the health and well-being of their future families and on population growth, especially important in Pakistan given its high population growth rates (Universal Primary Education Within Pakistan's Reach in Next Decade, ¶ 2).

Under such recommendations government has introduced reforms in education sector, from primary to higher education, with a commitment to female primary education, which is the foundation of the entire future entrepreneur in the developmental sector. Public sector education department is the main stakeholder to shoulder female primary education as it offers services on cheap rates and in present time with monetary and other incentives to female students.

However, it has been noticed that parents send their female children to schools for the sake of incentives offered by the government instead of socio-cultural need, which generates sort of apathetic attitude among the parents towards the benefits of education. This situation emphasizes the need of active role of local communities because it is necessary in a civic society as they are expected to participate equally in the promotion of literacy rate of the female children by supporting parents in day today social matters. Female children are still facing child labour problem even at their homes and considered less important while comparing with issues by the parents. The issue is acute in the economically depressed areas of the country consisting of more or less 68 % population where female children are preferred to stay at home rather than in the school. The National Child Labour survey,

conducted in 1996 by the Federal Bureau of Statistics, found 3.3 million of the 40 million children (in the 5-14 years age group) to be economically active on a full-time basis. Of the 3.3 million working children, 73 per cent (2.4 million) were boys and 27 percent (0.9 million), girls. Children's contribution to work in rural areas is about eight times greater than in urban areas. In addition to this, it has been observed that the rural children are mostly engaged in the agricultural sector (74 percent), whereas in urban areas, most working children (31 percent) are engaged in the manufacturing sector. In both areas, the percentage of girls working in manufacturing and services is higher than that of boys (Pakistan: Child Labour Situation, ¶ 4).

Therefore, it is important to note that if 50% of the population of Pakistan is not focused then how they could play their role in development of the nation, whether economically, socially, or politically.

Research question

The study aimed to find out the reasons for the lack of interest among the parents to support their female children to receive primary education in the public sector despite the incentives being provided to them, and further how parents and community can be the success factors for the enhancement of female primary education.

Literature review

'Educating girls may very well have the highest returns of any investment available to Pakistan,' says Barbara Herz, a Division Chief at the World Bank for Population and Human Resources in Pakistan (Universal Primary Education).

Although women's education witnessed a major improvement in the 1990s, still Pakistan is considered to have the largest gender gap in literacy ratio (PAKISTAN: Gap widens in male, female literacy rate, ¶ 1). Primary

education has direct impact on economic growth and democratization of a country. The latest empirical studies on the question of the impact of education on economic growth all report a positive association (Barro 1999; de le Fuente and Domenech 2000; Hanushek and Kimko 2000). On democratization, Barro (1999a) finds in a study of more than 100 countries between 1960 and 1995 that the propensity for democracy rises both with primary schooling and with a smaller gap between male and female primary attainment.

It is felt that primary education helps to reduce poverty and contribute overall economic growth but despite efforts child labour at home, especially female children, is one of the hurdles in getting majority of female children educated. Child labor has assumed epidemic proportions in Pakistan. Statistics are unreliable, but the Human Rights Commission of Pakistan (HRCP) last year estimated the number of Pakistani working children to be “realistically in the region of 11-12 million.” At least half of these children are under the age of ten (Child Labor in Pakistan: An Inexhaustible Labor Pool ¶ 1).

Efforts have been made since the past few years with the assistance of international community such as USAID Education Programme under its component, Education Sector Reform Assistance (ESRA), to support Pakistan’s education reform initiative. This initiative is working fundamentally to transform basic education by increasing student participation, improving the quality of teaching, involving communities, improving school facilities, and raising the quality of administration on the district, provincial, and national levels. Currently, ESRA works with nearly 10,000 schools, providing classroom resources, training teachers, and helping to create and empower School Management Committees (like Parent Teacher Associations - PTAs). This initiative facilitates parents and community members in contributing toward the running of government schools that their children attend (Partnership for Education, ¶ 4).

'Genuine reform,' according to David Seeley (1981), author of *Education Through Partnership*, 'depends on working on relationships — with the home, community groups, politicians and business.' Research also supports this for example in the USA in 1988 San Diego City Schools adopted a district parent involvement policy that closely paralleled the state policy. The policy addressed structures for effective parent involvement, supports for teachers and parents, and the use of community resources (Chrispeels, 1991).

The researchers argue that policy plays a critical role in parent involvement and should be a priority for policymakers, so they (Davies, 1987; McLaughlin and Shields, 1986, 1987; Oakes and Lipton, 1990 and Heath and McLaughlin, 1987) call for the development of a national child resource policy.

If proper measures and policies are not taken into consideration, we may not get the required results as the reputed disinterest of low income and less educated families has been refuted by many researchers who have found that, in general, these parents do wish to become involved, but often lack the information needed to do so (Epstein and Becker, 1982; Clark, 1983; McLaughlin and Shields, 1987; Davies, 1988, Dauber and Epstein, 1991; and Epstein, 1984; 1986; 1991). Whereas, Lightfoot (1975) differed on this and found that not only do low-income parents value education, but also they view schooling as an avenue for economic and social success.

Hence the literature reveals the difference between the perceptions of parents and school personnel concerning the purposes, goals, and outcomes of schooling.

Methodology

Fifty families (with focus on mothers) living in the rural areas of five union councils in the Lahore district, Punjab, were interviewed in the light of ten broad questions (Appendix: A). The data were qualitatively analyzed for findings of the study.

Findings

Results of the study reflect that economic hardship is one of the core issues along with apathetic attitude of the other family members as well as local communities towards the solution of the problems most of the parents come across regarding female primary education. Poor economic resources limit parents' ability to provide for the education of their children and hence force them to augment their children's education (especially female children) with resources in the home. The study further reflects as incomes of poor families fall, parents' willingness to educate daughters falls faster than their willingness to educate sons. Poor parents, especially mothers rely more on girls for help at home or at places where they work as maids in such circumstances.

Another cause for the lack of female enrollment for primary education is parents' concern about the safety of their daughters and adherence to family traditions considering the conditions under which their daughters are educated such as the gender of the teachers, the distance to the school, sanitation, security, and seclusion of the school buildings.

Such concerns emphasize the involvement of parents and local community in the education of their children especially girls, but unfortunately it has been noticed that communities are not playing their due role in the true sense of the word as the job of union councils' is to interact with families within their jurisdiction and expected to be approachable to the community members as well. Findings indicate elected members do not provide assistance to the community members regarding awareness of female education leaving much onto teachers or school management who have their own limitations. Although there is gender equity among the representatives, there is need to take the responsibility of promoting female primary education in true letter and spirit by all the elected members of the union councils.

Discussion

After sixty years of its independence, female literacy rate of our country has yet to achieve the required level whereas the other South Asian countries have shown commendable performance but Pakistan's progress in education sector is rather less encouraging. More or less all-previous governments in Pakistan claimed to have focused primary education and allocated reasonable funds to raise the graph of female literacy along with some concrete steps; the same has been done by the present one. It is indeed a good omen that the focus is on primary as well as higher education simultaneously. But despite monetary allocations it is observed that some quarters are not motivated to do full justice to the cause. For instance, recently district government system has been introduced, but it is important to note whether communities are effective to enhance female primary education because in a society like ours there is still strong influence of communities on the members of the community.

The government of the Punjab has tried to unburden the parents by giving monetary assistance to female primary level students as well as books to ensure decrease in the drop out rate. It may take children to the schools but the real objective of knowledge and awareness needs to be addressed so that the same children should continue education instead of getting primary education for monetary benefits.

Primary education, in fact, determines the future of a nation's multidimensional development in various fields. Many NGO's are also rendering services together with the government institutions for the uplifting of female primary education to bring it at par with the international standards. Children and only children can guarantee better and bright future of a nation and, if neglected, can also turn the national aims otherwise. Time has come to study factors responsible to improve the number of school going female children at primary level. There could be many others but parents, and communities, are the core components that need special emphasis and care to increase female primary education in the country.

The procedure of these two institutions' utilisation is briefly suggested below in light of the findings of the study.

Parents

Family's role is vital to success in educating female children. Information and awareness raising campaigns should target parents, particularly mothers and encourage them to register female children in school for the sake of better future. It is in our practical knowledge that in society like ours families exercise influence on individuals and it is imperative to channelise the same power for the promotion of female primary education, especially in the newly established local bodies set up. However, for the children to remain and succeed in school, thorough action must be taken to encourage families to change attitudes and lighten the so-called domestic workload of the female children and provide them with the time and a comfortable space for learning at home as well as discourage children to become breadwinners.

Parents (especially mothers) may be called upon to increase their involvement in the process of educating their female children by providing adequate follow up to academic learning at school and at home. In Pakistan people are very much under the influence of their families (Khandaan), and if family participation in education sector is promoted there could be positive results in achieving the required targets on one hand and decrease female children drop out rate on the other.

Mothers play an important part in the social growth of children, particularly when fathers are the sole breadwinners in most of cases among economically suppressed class. In their absence mothers have to shoulder most of the responsibilities pertaining to education. Approximately 67.5 % of population of Pakistan lives in villages with meager socio- economic facilities. The mothers living in country areas are more burdened than town habitants where we experience a different situation, but the economically stressed families out of 67.5 % face severe hardships in bringing up their female children bound to get married at early age without getting sufficient education

and practical know how of the society. It may be one of the other reasons of the drop-rate at primary level of female children.

Community

Communities' role is always significant in the development of societies and especially in the current scenario where the world has become a global village the importance of communities' participation has become decisive. Perhaps we have not yet accepted the importance of community involvement in the education field; however, despite difference of opinions the role of communities in the improvement of literacy rate in female primary education is above board. Communities' commitment to female primary education is considered from several angles namely:

- (a) attractive effect on the families in the community;
- (b) agent for change in social and cultural factors that determine the representation of, and attitudes towards children;
- (c) decisive support to the school in terms of access, attendance, management and improvement of education quality; and
- (d) feeling of ownership of national policy that guarantees success in the field.

The local bodies' councilors can be given a task for the awareness to improve female literacy rate. To set communities on this track, important players are identified:

1. School administrations.
2. Association movements and various political, cultural and religious leaders.

While community involvement is necessary to promote awareness and mobilisation for primary female education, it is also essential to adopt a participatory approach empowering the community and reinforcing its ability to organize and intervene on its own behalf. Only then will communities be able to take over female primary education projects and extend movement beyond isolated campaigns.

As agent of change communities can also guide female teachers with the help of education management for the enhancement of female primary education. They can:

- Implement strategies for frequent supervision of female teachers for enhancing female primary education.
- Create sources of motivation and encouragement for female teachers who voluntarily extend service for this cause.

Conclusion and Recommendations

Keeping in view the findings of the study it is pertinent to say that parental participation and community involvement is important for girls' attendance in primary schools. For this government must:

- train the head teachers and administrators to encourage the creation of parents and community committees
- invite NGOs for expert and technical assistance
- monitor the just dispensing of the incentives promised to be given to female education at primary level

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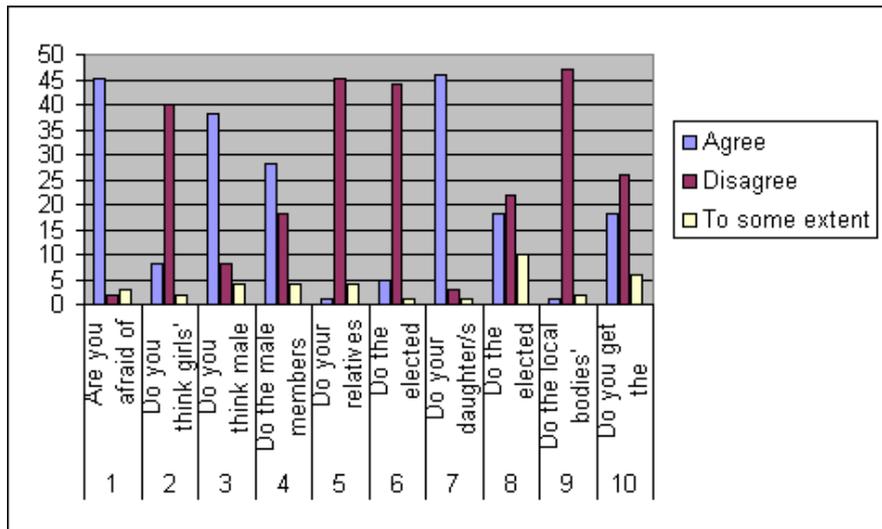
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Appendix

Interview Questions

Sr. N o	Question	Agree	Disagree	To some extent
1	Are you afraid of sending your daughter/s to school because of economic problem?	45	2	3
2	Do you think girls' schools are situated far from your home?	8	40	2
3	Do you think male education is more important?	38	8	4
4	Do the male members allow sending daughters to school?	28	18	4
5	Do your relatives help you to send your daughters schools by supporting financially?	1	45	4
6	Do the elected counselors meet you frequently?	5	44	1
7	Do your daughter/s help you at home in household affairs more than sons?	46	3	1
8	Do the elected counselors meet you when you approach them?	18	22	10
9	Do the local bodies' members provide you assistance in sending children to schools?	1	47	2
10	Do you get the incentives, which the government promised to send girls to the schools?	18	26	6

Graphic display of results



Developing a Model for the Continuing Professional Development of Teachers in Sri Lanka. A Qualitative Investigation.

Lalitha Batuwitage, ESC Projeet, GTZ, National Institute of Education ,
Maharagama

ABSTRACT

Providing opportunities for teachers for their continuous learning and lifelong education is a subject at the top of the national agenda in the field of education in Sri Lanka. Addressing this key issue, the government has initiated a process of identifying the continuing professional development needs of teachers evaluating how these needs are met making a conscious effort for continuous improvement of knowledge, skills and attitudes of all teachers. This paper explores how and Distance Learning Approaches are being used as an integrated model to promote continuing education of teachers in Sri Lanka. Although there was no specific model to be adopted as formally recommended, it was observed that the teacher educators provide learning opportunities to teachers in using multimedia techniques of distance and open learning inside and outside of schools in focusing on school based professional development of teachers. The School, The Teacher Center and The National Institute of Education are the key institutions for planning, implementing, monitoring and evaluating of programs for the continuing education for teachers. The main reason to the successful operation of the program is cooperative, supportive working culture and the integrative tasks of the key stakeholders. An integrated model can be observed in operation in the continuing teacher education programs in Sri Lanka..

Introduction

In increasingly complex and rapidly changing societies everybody's cultural level and capacity to learn have been enhanced. The teacher's task is therefore more important than ever before. For children to learn more their teachers must continually be learning more. As we raise our expectation for our children, we also expect teachers to learn more and do more. (UNESCO, Report, 1995)

The issues of complexity and change indicated in the UNESO document under reference highlight the idea that continuing education for both teachers and children is inherently important for survival and growth in the (moving into the) global village in an information era. Teacher professional development includes both initial (pre- service) and continuing (in-service) education. 'Initial teacher professional development is used to describe all forms of teacher education leading to initial development is used to regardless of whether the training is undertaken before or after being employed as an untrained teacher . As NATE (1997) asserts, continuing professional development of teachers is used to further development through professional practices (formal and non-formal) which enhance the professional development of teachers in service.

Various terms are used in relation to continuing teacher development in education world over today, such as professional development, professional learning, in-service education and learning, continuing professional development, in –service training, resurrect education, continuous career development and life-long learning (Woolfs,1991). As a matter of necessity, continuing professional development must equip teachers for challenges in a complex and rapidly changing society, in mastering new skills and responsibilities in relation to classroom practice. Teachers need opportunities to develop, master and reflect on new approaches to working with children to address this necessity.

Continuing Professional Development of Teachers in Sri Lanka

Continuing teacher development is at the forefront of the national agenda in Sri Lanka and is focused on developing standards for student's achievement. Teachers need to be well trained in the latest teaching learning process, skilled to meet the challenges of modern society and capable of adapting to reform in order to implement the new educational reforms which were introduced in 1998. realization of this need, concerns about the quality of teacher improvement and the importance of continuing professional development of teachers have received much more attention in this educational reform movement, which has recently driven the entire national educational agenda.

The Annual Report of the National Institute of Education (NIE, 1997) emphasized the importance of continuing professional development of teachers, pointing out that learning throughout their career is essential for professionals in education to develop academic and professional competencies to be able to meet calls for higher standards and improved quality to be more accountable. Furthermore, the report indicates that continuing professional development enhances the ability to anticipate and prepare for change.

The teachers need continuing professional development particularly to empower them with updated and rejuvenating experience in the teaching and learning process that would help them stay up to date and meet their individual learning needs without requiring a lot of time away from their classrooms and students. This is what was identified in the needs survey conducted by Perera, (1990).

Objectives of the study

The following objectives were established and achieved in the study.

- * Identification of the characteristics of the continuing professional development of teachers.
- * Identification of existing practices and theories for the continuing professional development of teachers.
- * Identification of supportive system which influences continuous teacher development.
- * Identification and recording the integrated character of the existing model continuing professional development of teachers for a formal expression to be nurtured and promoted in Sri Lanka.

Research Design

“Qualitative research enables us to make sense of reality to describe and explain the social world and to develop explanatory models and theories” (Morse and Field, 1995)

Qualitative research approach was used in incorporating some elements of grounded theory to benefit from the advantages using elements of grounded theory which allow the researcher close access to a particular phenomenon in its natural setting.

Sample

Purposive sampling method (Miles and Huberman, 1994) was used for selecting the sample. The sample included one teacher center, three instructors including the teacher center coordinator, ten schools, the ten principals of the selected schools, five teachers in each of the ten selected schools, seven teacher educators and two performing activities for observational situations.

Method of data collection

interviews, observations, Meetings, journal writing and documentation reviews were used in the process of data collection.

Data collection

The study used detailed semi structured interviews with ten focus groups of teachers from ten selected schools and ten school principals of the selected schools. The perceptions and beliefs, interests and concerns about continuing professional development of teachers have been collected through the interviews. In essence, an understanding of the learning culture and the supportive system inside as well as outside the school has been gained during both the observations and interviews. The journal, maintained by the researcher during every step in the study was analyzed and used for the triangulation of the data. During meeting with the teacher center coordinator, instructors, participants and program developers, more information have obtained, with the aim of categorizing, analyzing, and comparing the information collected.

Data analysis

The qualitative data was coded according to significant meanings as described by Miles and Huberman (1994) considering analysis as involving working with data, organizing them, breaking them into manageable units, synthesis searching for patterns, discovering what is important and what is to be learned and deciding what the researcher wanted to tell others.

Theoretical framework

This study was mainly based on the application of self-directed professional development practices which have been inculcated with adult and constructivist learning theory. Inside and outside school approaches for continuous change of teachers were examined and analyzed to identify the key features of the Integrated Model of Teacher Development. The relationship of the key responsible institutions in this concern was focused.

Results

All the responses analyzed (were leading) were seen to be leadings to two main approaches for continuing professional practices of teachers. One reflects conducting of activities outside schools and other leads to conducting activities inside school. The results reveal that between these two, the dominating approach is inside-the –schools approach. The teacher Centre is the focal point for the outside-school practices in professional development.

The following elements of a model in the absence of a formally recognized and promoted one were observed, deeply probed for recognition and subsequently recorded, supported by evidence.

A school-based professional development model was emerging in all the ten schools where the teachers were engaged in a variety of activities in an *Integrated Mode*, though they have different standards. This was evident in the statement of a *teacher recorded* as follows:

“Our principal is a very energetic person who wants to experiment new things. Therefore, new activities were introduced for us to undertake for our self development such as action research projects and case studies, working with school family. I like to improve myself because I feel that then I can do my work well. Once in a while our principal assesses our performance”
(Teacher No. 43)

The statement indicates the inside school activities for teacher development which have been performed because of the keen interest and special attention of the principal One principal explained his personal view and the action which he had taken for professional development of his teachers with the following words;

“I do not like to send my teachers outside school to participate in one or two day training activities for a professional change. Therefore, I have initiated some practices within the school for continuous development of teachers. All the teachers can get themselves involved in these practices”.

Self-directed open learning practices leading to professional development were observed. The teachers were observed having been directed to engage themselves individually as well as in small groups in these practices. Writing Reflective Journals, Reflective Teaching, peer Coaching, Working with school family project Work, case Action Research, Small Scale Research, Open Discussions, Clinical Supervision, professional Day, Innovative Groups Writing Groups Reading Groups Self Assessment, Staff Development Meetings, School Level Conference, Sectional Meetings, Subject Heads Meetings, and Library visits were are the identified as major the activities of the Integrated Mode of the school – based approach. Although different levels were noticed in the ten schools, the teachers’ role as self-learning individual was effectively discernible within the school.

Observations revealed that continuous changes in the curriculum and the subject content, methodologies in learning teaching process, new trends in education and educational practices form the four main elements that have been inculcated in continuing professional practices of teachers as applied. Responses from the research participants revealed that other elements of the four have been integrated to create synergies, while focusing on one element which reflects the main interest.

The staff meetings in all the ten schools have a modernized approach. It is quite different to the traditional type of staff meeting. This staffs meeting allows the teachers to gain knowledge on various educational information and new trends of the professional field. The staff meeting have been used not for purpose of data collection. The meeting conducted by the vice principals, school heads as well as subject leaders are organized on an educational

level in creating opportunities for teachers to explore their professional experiences.

The results of the study indicated that even though the teachers are been guided by these committees in various stages, the ten principals too make use of opportunities to guide teachers individually at least once or twice a term. In the National Schools these individual teacher observations have been carried out once a term while in Type 3 School, there had been three such opportunities.

When there was a need for having professional change to all staff members in areas such as new educational reforms that were taught, new trends in education and the educational technologies, teacher development programs were organized on a general basis. These programs deals with an approach in educational practice more than a subject knowledge development approach. The ten schools have named these programs as “Whole Staff Development” very often such programs have been organized through the Teacher Centers with the participation of educational of experts In seven schools out of ten under this study recorded such programs to have been organized once a term. Such Whole Staff Development programs to have been organized once a term. Such Whole Staff Development programs were organized without disturbing the general school activities scheduled. The help of parents, past pupils and the prefects had been mobilized on such occasions in some schools.

There is no approved financial arrangements for funding continuous professional development in any of these ten schools. Various methods have been used by the school with the approval of the Regional Education Ministry. Among them were affordable collection from the staff itself, contributions from parents, well-wishers of the schools, assistance from and the sponsoring-ship of private organizations and the support from the past pupils stand important. Although there is no specific fund for continuous professional development of the teachers, it was observed that sufficient alternative funding methods have

been under operation. In this manner, instead of the teachers going out of their schools for professional enhancement, a model where professional enhancement was seen within was apparent.

There were many instances where the principal, academic staff as well as the non-academic staff meet together. All the principals were of the opinion that the school environment should reflect a profile of the professional enhancement of the teachers. Therefore, separate committees were formed by the principal to take the responsibility in maintaining school premises such as the school play ground, canteen, primary and the higher section section, school garden, staff room and rest areas etc.

The other special feature was the leadership role that was observed in these ten schools. There is a group leadership and group feelings. The principal, vice principal and sectional heads work very closely. The next rang was the teachers. The teachers also work as groups. All ten principals exhibited corporate, flexible and good leadership qualities.

Very often planning is done in groups. Different can be seen in the deferent schools, but this collective group aspect is present in all the ten schools. There is a relationship with the school community. The teachers were directed to ten schools. The inter-relationships among the teachers can be seen as a result of the facilitative leadership role f the schools.

A strong relationship with the Teacher Centre was another aspect observed in respect of all the ten schools. All of them use the human as well as physical resources which are available at the Teacher Centers.

The professional development practices performed outside the school was always organized in association with the Teacher Centre. There were the zonal teacher education instructors, the subject instructors in respect of primary, secondary and upper secondary levels meeting at the Teaching Centre (TC) to organize their monthly, yearly rograms. They perform "Instructors

circles” at the TC. It is also indicated that the teacher development programs which were organized by the subject instructors also take place at the TCs mobilized by the zonal education office. A special feature was that no other teacher development programs are organized without the knowledge of the TC. There is a good communication process between the Education Ministry, the Education Department, the Zonal Educational Office, TCs and the Schools reflecting a communication process that works horizontally as well as vertically. This is a very special aspect observed. This type of connection is very rarely noticed under normal conditions of Sri Lankan education environment. The general view expressed by the Work Bank (2001) is that there was no favorable relationship among these institutions.

There is a rehabilitation program for the teachers of low performance. Such Teachers are directed to the TC for a period of about one month. They are exposed to the TC environment and activities. This arrangement is made not as a punishment, but as an opportunity for getting exposed to change. The arrangement has found contributing to teacher development. One of the teachers who participated in this program commented as follows;

“ I was attached to the TC for one month. I am a person who used to take leave very often, come to school late, and showed less preparation too. The principal very often saw only my faults. I did not direct myself to individual activities either. That is the very reason why I was detected to wards the TC by the principal. There I came to know a lot of things, methods, my responsibilities, and also how to get about my work. The nature and the activities of the TC helped me a lot. I feel that every teacher should be given such a chance”.

The statement is indicative of the contribution made by the teacher rehabilitation program and is its potential to bring a developmental change in the teachers.

The monitoring activity is school based. The school has a monitoring unit from which the TC obtains needed information. The performance assessment of teachers is done by the respective principals in the schools. The performance evaluation information is sent to relevant authorities through the TC. The principals discuss information about performance and observations of activities and results of such activities at the principals meeting held at The TC. At the end of every year the results are analyzed on a classroom basis. Annual examination results are analyzed on a subject basis. The schools are compared by school results along with the development of the teachers. Teacher appraisal programs are organized once a year in these schools in order to motivate them. The strong and weak areas are analyzed and the professional development of the teachers concerned is given priority. This information is used as criteria for nominations teachers for long term professional development programs organized by outside institutions.

The school family concept brings about closer relationship among the schools. According to their location these ten schools belong to three school family units. A constant, strong relationship is visible among these three schools. At least once a term they meet together in one school. They go round the school to exchange their professional experiences. Exchange of resources and professional experiences is seen among them. The concept of the school family very often leads to strong relationships among the schools.

Focus on Professional Needs of Teachers

Professional development activities have been designed based on the professional needs of teachers. The teacher educators, teachers and the principals have confirmed that especially the TC has followed systematic ways including formal and informal methods to identify the professional needs of teachers.

The collected and listed professional needs were categorized into two groups which can be fulfilled by inside school and outside school activities. The following key steps have been followed to fulfill the requirements as pointed out by the Teacher Centre coordinator,

- * Working with the NIE (National Institute of Education) to identify the national needs and prepare self – directed packages in using distance open learning mode to cater to the identified national needs.
- * Identifying the local needs of teachers and preparing activities in collaboration with the NIE.
- * Developing packages by the T to fulfill the professional needs of individual schools in the education zone.
- School leaders prepare activities to cater to their specific professional needs and get assistance from TC if necessary.

School Culture and Teacher Development

The data clearly show the elements of the positive learning culture in these schools. The effectiveness of having a learning culture for the continuous professional change of teachers is emphasized. The characteristics identified are,

- * The principal has decentralized the responsibilities.
- * A Monitoring and Guiding Team including the Vice Principals and Sectional Heads has been appointed. This team is handling the following:
- * Groups are formed to be responsible for maintaining cordial relations with well-wishers and to be responsible for working with the past students.

- * The professional needs of teachers are listed annually and are analyzed with the assistance of the teacher education.
- * The group entrusted with the teacher appraisal work, evaluate is teacher development received externally as well internally.
- * Schools celebrate a “Teachers Day” annually with the participation of the principal, teachers and the teacher educations of the TC.

Inculcation of Adult and Constructivist Learning Theories

The practices focus on the importance of incorporating the adult and constructivist learning theories into the professional development of teachers, ensuring that the concept of teachers self directed adult learners is always kept in mind. The study observed the elements as identified by Brookfield (1995) being adopted in the professional development practices. First these practices were self-directed, experience-based learning needs of teachers.

Second, teachers were observed using practical knowledge in their practices, which is context bound and self-validated. Brookfield’s assertion of a dult education programs, which should be organized around “life application” categories and sequenced according to learners’ readiness to learn is visible in the performance observed in the schools studied.

Similar to the Adult learning theory, elements of the constructivism theory by Savery and Duff (1994 p2-4) were observed within the development practices of teachers implemented inside and outside schools. The elements observed include, anchoring all learning activities to learners’ needs, supporting the learner in developing ownership for the overall problem or task, designing activities and the learning environment, giving the learner ownership of the process used to develop a solution, and challenge the

learner's thinking encouraging testing ideas against alternative view and alternative contexts and providing opportunity for and support reflection in both the content learned and the learning process.

The study revealed that the inculcation of key characteristics of adult and constructivist learning has influenced practices to be successful.

Tasks of the key Stakeholders

The National Institute of Education, the Ministry of Education, Provincial Education Department, Zonal Education Office, the Teacher Centre, and Schools area the Key Stakeholders for continuous professional development of teachers.

The provision of academic support for continuous professional change for teachers is the main responsibility of the National Institution of Education and the Teacher Center. Financial and physical assistance and administrative support are provided by the Ministry of Education, The Provincial Education Department and the Zonal Education Office.

The tasks of the Ts are to assist, support and facilitate teachers for their career development, as well as to implement the activities to meet teachers' specific needs, using open and distance learning approaches.

Integrated Model for Continuing Teacher Development

The results presented above as recorded by the study form elements of a model which is in operation Sri Lanka for the continuing professional change of teachers. The variety of activities that are being adopted can be inculcated into a formally expressed model of teacher development. The conformity of the elements with the relevant theory as observed in the qualitative method used in the study qualifies the evolving model to be introduced as an "Integrated teacher development model" The elements of

the school-based approach with all other external professional development activities revolving around the Teacher Center form the operations producing synergies expected in an integrated model.

The research findings confirm that the current continuous teachers development model in Sri Lanka, as an “**Integrated Model**” has a set of focused self-directed, school-based professional practices. With the current operational mode by focusing on the needs of teachers as adult learners, by using a variety of open and appropriate distance learning techniques based on constructivist and adult learning principles and by incorporating the tasks of the key stakeholders, in the implementation of the continuous professional development practices of teachers, an “**Integrated Model**” can be formally presented for wider adoption in Sri Lanka.

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A Study of Status and Characteristics of Burnout Teachers of Affiliated Colleges

Seema Rani, Associate Professor(Education), D.A.K. College, MBD
C- 103 Gandhi Nagar Moradabad , U.P , India.

ABSTRACT

The study focused on an understanding of burnout teachers of affiliated colleges. Particularly, it aimed at finding out if there were burnout teachers in these colleges. If so, then, what were their characteristics. Only job satisfaction, stress, and locus of control were studied as related to burnout condition. Tests for measuring these traits were constructed by the researcher. The sample consisted of 256 college teachers drawn from 15 colleges (25 percent of total) selected systematically. The test measuring these variables (TCQ) had four scales each having 20 items and measuring burnout state, stress, job satisfaction, and locus of control. Their reliabilities for 50 teachers were respectively 0.838, 0.919, 0.754 and 0.859. Their validities worked out on 25 cases were 0.876, 0.551, 0.866 and 0.489. Two groups independent design was used involving comparison between 114 burnout and 116 non-burnout teachers as identified on the basis of the burnout scale. For analyzing data t-test of significance was used. It was found that burnout college teachers were less satisfied on the job, were more stressful and externally controlled. This certainly is a cause of concern when qualitative improvement of college education is considered important. A powerful system of higher education derives its power from teachers who man the system.

Introduction

Accordingly to Maslach and Jackson (1991) burnout is defined in terms of three components, (i) emotional exhaustion, (ii) depersonalization and (iii) personal accomplishment. As such, when a person feels that he can not do anything, when he loses motivation to do anything, when he thinks that he has no capacity to achieve anything, when he lacks interest in his profession, he is said to be suffering from burnout state of mind. Blasé (1982) and Seleye (1946) studied the concept as job-related stress depending upon intensity and duration.

Teachers' burnout for the purpose of this study is defined as the state of mind which is related to their status of feelings, motivation, ambitions, interests, commitments, responsibility, etc. as linked with their professional work and activities, being at the lowest ebb. As reflected in their overt behaviour it is defined as least worried about promotion, feeling hopeless about success, least interested in teaching-learning, not concerned with students attending his class, having least liking for the profession of teaching, least desire to come to college, least interested in helping students, least interested in participating in various activities of the college, feeling tired of working with students, least worried about quality of student's research work feeling hopeless when faced, with difficult situation, feeling stressed in the college, feeling dissatisfied with his achievements and so on.

Stress:

For the purpose of the present study stress is defined as being distressed due to students indiscipline, being overburdened with work, the department being understaffed, lack of colleagues cooperation, principal's favoritism, principal's ineffective administration, teacher's group rivalries, students absenteeism, students' undue pressures and interference with teaching and evaluation, principal's unwillingness to support even for good cause, undue interference of management member, lack of opportunities for professional

development, teachers' groupism, principals indifference to qualitative improvement of teaching etc.

Job satisfaction:

Job Satisfaction is the favorableness or unfavorableness with which an employee views his work. It expresses the amount of agreement between one's expectations of the job and the rewards that the job provides. Since job satisfaction involves expectations, it relates to equity theory, psychological contract and the motivation to work. It is the sum total of one's feelings on the job. It is dynamic and is part of life's satisfaction. It is an employee's attitude towards his job which makes him like the job. In other words it is an employee's affective response to the job which brings him happiness. It is a pleasurable or positive emotional state of human organism resulting from the appraisal of one's job or job experience. To the extent a person's job fulfills his dominant need and is consistent with his expectations and values the job is said to be satisfying.

For the purpose of constructing the job satisfaction questionnaire teachers' satisfaction was defined in behavioral terms as "satisfied with the job," enjoying the job," liking to teach," "satisfaction with available facilities," "interest in teaching," favorable attitude towards students," "feeling happy to come to the college," "satisfaction with promotional opportunities available," "satisfaction with work-load," satisfaction with college environment," considering himself to be lucky to have got the job of teaching," "satisfaction with officers' treatment," considering the teaching job as quite neat and clean", "considering the job tension free", and so on.

Locus of control:

Teachers' locus of control has been defined for the purpose of construction of this inventory as the extent to which the teacher perceives himself to be autonomous, to be able to control his own environment rather

than depending on others help to solve his problems. Rotter (1966) believed that there were people who think that they are in control of their lives and also there were people who think that life is more subject to fate, chance, powerful others and the complexity of forces surrounding them. Basing largely on this concept, the teachers' locus of control is defined as the extent to which they can manage their affairs themselves instead of seeking environmental support. In other words it means teachers' perceived power of controlling the environment rather than being controlled by the environment. The context of teachers' perception of the quality is confined to the teaching-learning environment as against Rotter's Internal-External (I-E) Scale which is a general one not applicable to any specific group only. It applies to all people in all fields, but the present inventory is specific in the sense that it measures locus of control of teachers only.

Hypotheses of the study:

Following hypotheses were formulated for testing:

1. That, there are definitely some burnout teachers in the affiliated colleges.
2. That, the burnout college teachers are more stressful as compared to other teachers.
3. That, the burnout college teachers are less satisfied with their job as compared to other teachers.
4. That, in respect of locus of control the burnout college teacher are significantly different from other teachers.

The method

The method used for the purpose of this study was quasi-experimental design; more specifically, it was the field study instead of field experiment. Kerlinger (1973, p 405) makes a distinction between field experiment and the field study which is also described by him as the ex-post-facto study. In case

of field experiment according to him, the groups to be compared are formed on the independent variable and they are, then, compared on dependent variable. In case of field study as held by him groups are formed on dependent variable and they are, then, compared on the independent variable. In this study the purpose was to find out relationship between college teachers' burnout characteristics and certain other behavioral and psychological characteristics. The query was addressed to whether college teachers burnout state was related, in any way, to these factors. All these variables were thus treated as the independent variables and burnout condition of teachers was taken to be the dependent variable. The groups to be compared were formed on the dependent variable, the college teachers burnout state of their being. Hence, as explained, field study design of experimental research was considered to be the appropriate statistical method for analyzing the data.

Two groups of burnout and non-burnout college teachers were identified on the basis of the scores on Teachers Characteristics Questionnaire (TCQ), of all the 256 teachers who formed the sample on the burnout scale of the Teachers Characteristics Questionnaire (TCQ), consisting of 20 items. The mean of the whole sample was found to be 54. Those whose scores were 58 and above were labelled as non-burnout and those whose scores were 50 and below were named as burnouts. Twenty six teachers having scores of 51 to 57 were left out considered doubtful cases for maximizing experimental variance. In this way 116 teachers were identified as non-burnout and 114 were identified as burnouts Low score on this inventory indicates high burnout characteristics and high score means non-burnout characteristics.

The population :

The population for the purpose of this study was defined as all the teachers working in the colleges affiliated to a particular University. There were 68 such institutions having approximately four to five thousand college teachers. Self-financing and other special institutions were excluded.

A complete list of these colleges and their teachers constituted the target population for the purpose of this study. But, eight colleges which were of entirely different types such as the management training, university departments, institutions of technology and self-financing institutions were excluded from this list. Thus, the actual accessible population consisted of 60 colleges. This formed the first level sampling frame.

Since the number of colleges and the teachers working in them were very large and data collection from them within the resources of this researcher was not possible, it was decided to draw a small representative sample. A double-stage sampling scheme was planned. At the first stage the unit of sampling was the college while at the second higher stage the unit of sampling was the college teacher.

It was decided to select 15 colleges (25 percent of the total) out of 60 colleges. Systematic sampling technique was used at the second stage, again, a 25 percent sample was selected from amongst the teachers working in each college randomly. This made available a sample of 256 college teachers to the researcher. This sample formed the basis of data collection, its analysis and results.

Measurement of variables

The study involved one dependent and three independent variables. The dependent variable was teachers' burnout characteristic. The independent variables were (i) job-satisfaction (ii) stress and (iii) locus of control.

For measuring the variables involved in the study a tool was constructed by the investigator herself titled as the Teachers Characteristics Questionnaire (TCQ). The TCQ consisted of four subscales each having 20 items. These four scales measuring four characteristics were (i) burnout scale (ii) stress scale (iii) job satisfaction scale and (iv) locus of control scale. For constructing these

scales each trait was defined in behavioral terms as described earlier. Their reliabilities and validities were worked out to be as follows:

Table 1: Reliabilities of the Scales of TCQ

S.No	Scale	n	Coefficient
1-	Job satisfaction scale	50	0.754
2-	Burn-out Scale Scale (TCQ)	50	0.838
3-	Stress Scale	50	0.919
4-	Locus of Control Scale	50	0.859
5-	Whole Sce (TCQ)	50	0.925

Validities as calculated were found to be as follows:

Table 2 : Aalidities of the Scale of TCQ

S.No	Scale	n	Coefficient	Remark
1-	Job satisfaction scale	25	0.866	Sig.
2-	Burn-out Scale Scale (TCQ)	25	0.876	Sig.
3-	Stress Scale	25	0.551	Sig.
4-	Locus of Control Scale	25	0.489	Sig.

Note : The 0.01 and 0.05 level table values as given in table 25, p 201 by Henery Garrett respectively are 0.505 and 0.396 for 23 df.

Analysis of data and results

The purpose of this research was to identify the burnout teachers working in the degree and postgraduate colleges and to describe in what respect they were different from other teachers herein called no-burnout teachers. The belief that there were certain teachers in these colleges was

based on the findings of researches done by several other persons in the field who had shown that these teachers were different in some respects from others.

The study, in a way, aimed at understanding the burnout teachers in psychological terms. The design of the study involved identification of the group of burnout teachers and then comparing them with no-burnout teachers on job satisfaction, stress and locus of control by applying the t-test of significance of difference between means. The following table presents the statistical results.

Table 3 : Summary of Results

NEEDS	1	Non-Burnout Group	Burnout Group	SE_D	t-Value
Job Satisfaction	Mean	63.897	54.851		4.0656**
	S.D.	15.827	17.865	2.226	
	S.E.	1.469	1.673		
Stress	Mean	52.603	61.079		4.117 **
	S.D.	16.29	14.917	2.059	
	S.E.	1.512	1.397		(228 df)
Locus of Control	Mean	53.096	56.914	2.215	1.72*
	S.D.	16.269	2.215		
	S.E.	1.511	1.620		(228 df)

Note : One tailed test of significance used in all cases.

* significant at 0.05 level

* significant at 0.05 level

It may be observed from the statistical results presented in the foregoing table that the burnout college teachers suffer from greater job stress and have lesser job satisfaction as compared to non-burnout teachers. Also, it is revealed that they seem to be more externally controlled.

Discussion

Having analyzed the data it was found that there was quite a large number of burnout teachers in the degree and postgraduate colleges affiliated to the University under study. Out of a sample of 256 college teachers 114, i.e., approximately 44 percent teachers were found to be burned out, their scores being below the mean on the burnout scale. This, certainly, is a cause of concern when qualitative improvement of college education is considered necessary. This finding seems to be very close to the observations of this researcher as well as of many in the field of higher education.

It is also found that the burnout teachers as compared to non-burnout teachers have much less job satisfaction. This, when interpreted in terms of the behavioral categories of the job satisfaction scale, means burnout college teachers, perhaps, do not enjoy their jobs, do not like to teach, have no interest in teaching, have no favorable attitude towards students, are not satisfied with college environment and facilities available. This finding is supported by the study of Gover (1983), who said "Dissatisfaction with the current job content—demonstrated the greatest propensity for explaining experienced burnout," The study of Mishra (1989) also revealed the same. The studies conducted by Feinstein (1982), and Colasurdo (1981) also support this finding. Hence, tentatively, it may be said that the burnout college teachers are not satisfied with their jobs.

Stress also has been found in the present study a characteristic of the burnout teachers. Several studies conducted by Bausch (1981), Belcastro (1981) this Difalco (1983), Harrison (1983), Walton (1982) Yvonne (1985),

Hall (1985) have concluded that job stress is the major characteristic of burnout teachers.

Locus of control as found to be a characteristic of burnout teachers in the present study is also supported by the studies conducted by Feinstein (1982), McIntyre (1982) and Millet and Jenne (1985).

It may be, finally, concluded that burnout college teachers as studied in the present investigation are less satisfied with their jobs, suffer from higher level of job-stress and are more externally controlled as compared to their counter group of non- burnout teachers.

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