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Designed by Katherine Dix

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An institution in search of excellence: Lessons learnt

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Not Me, Not You, but Together WE Will.

This is a report of the strategies adopted by the University of Malaya (UM), Malaysia, to address the issues and complexities involved in its search for excellence in teaching and learning, research and service. The story is told how the university sought accreditation through the International Standards Organisation (ISO) and how by uniting their heartbeats to breathe as one provides a platform for some individuals to rise to the occasion thereby adding strength to the team's struggle. The paper concludes that obtaining ISO certification is only a means to an end and, although the initiative towards change may have come from the top management of the university, any attempt to bring about change, requires that the parties involved have to become the change agents themselves.

Higher education, quality culture, ISO certification, managing change, continuous improvement

“We must become the change we want to see” Mahatma Gandhi

INTRODUCTION

This paper looks at how social development theory helped to explain the approach taken by the University of Malaya (UM) to impact on the movement of its staff from lesser to greater levels of energy, efficiency, quality, productivity and accomplishment. The university's awareness that it possessed a huge reservoir of potential human energy that had been absorbed and held static in its organised foundations, its work ethic, values, beliefs and leadership structures led the management to plan a strategy that caused these energies to be released and expressed in times of transition, crisis and opportunity. The management realised that policies, strategies and programs that tapped this latent energy and channelled it into constructive activities had the potential to stir the entire organisation to action and rapid advancement.

Although all of us in higher education want the services we provide to be of the highest quality, we are much less likely to agree about how to define and measure that quality because of differing perceptions of quality. The decision in choosing what constitutes quality is always based on values, often those shared by a group of stakeholders. Today the stakeholders in higher education consist of students, parents, future employers and the government who have varying interests and different priorities. Quality in higher education also takes on different forms between, as well as within, institutions because of different emphases in certain core activities and fields. As such, the way people see quality is like looking through a kaleidoscope where the pattern changes with any movement, however slight. Similarly, the way quality is interpreted changes with any variation in individuals, activities, or institutions.

Since the word 'management' often suggests centralisation and authoritarianism, it typically elicits resounding displeasure on the university campus. As such, it is necessary to create conditions so that people have greater input in managing their own work environments. That would then give them a greater sense of personal and professional accomplishment which would, in turn, lead to greater levels of commitment. However, most people dislike change. An individual is likely to resist change for three reasons: uncertainty, concern over personal loss, and the belief that the change is not in the organisation's best interest. Quality management requires an extensive commitment to educating and training workers in problem solving, decision-making, and team building. The people dimension of quality management requires a workforce committed to the organisation's objectives of quality and continual improvement. It is against this background that the description of the steps taken by UM to initiate much needed change is presented.

INITIATING THE CHANGE

Tracing the development over the years, it is worth noting that the decades of the 1960s and 1970s witnessed an explosion of intellectual curiosity about work motivation. Theoretical developments emerged in contemporary motivation theories such as goal-setting theories, self-development as well as reinforcement theories. Progress could be seen in both conceptual development and empirical research. The 1980s, on the other hand, witnessed a series of refinements and extensions as well as some new theoretical developments. Interestingly, by the early 1990s, intellectual interest in the development of work motivation theories, at least as measured by journal publications, had waned.

It is observed that in the new economic climate, replete with its dot-coms, e-coms and increased globalisation, a motivated workforce is frequently cited as a hallmark of competitive advantage; teams are redefining the notion of hierarchy as well as traditional power distributions. These changes have had a profound influence on how institutions attempt to motivate their members. Social development theory purports that human energies and activities should be organised at higher levels to achieve greater results. This development increases the utilisation of human potential (Robbins and Coulter, 1999). Deci and Ryan (2000) observe that people are active organisms, with innate tendencies toward psychological growth and development who strive to master ongoing challenges and to integrate their experiences into a coherent sense of self. This natural human tendency does not operate automatically, however, but instead requires ongoing nutriment and support from the social environment in order to function effectively. Field theory says that environmental forces and the ways we have learned to view our situations determine our incentives, goals and intentions. Recent theories (Cotton, 1993) suggest that our notions of what is possible, play a major role in motivation. In addition, studies of successful quality programs consistently demonstrate that these programs require active and strong leadership from the top management (Robbins and Coulter, 1999).

Realising that development required an enormous investment of energy to break existing patterns of behaviour and form new ones, UM embarked on a strategy by creating conditions for explosive energies to be released through a project that called for the involvement of every heartbeat of the university.

The management's initiative for change started with the analysis of feedback from a survey to get input on the perception and needs of academics. This step was followed by several sessions of sensitivity and team building training involving some 800 members of the university including both academic and support staff. The training, resembling the strategies used in the outward bound programs, consisted of sessions and activities that aimed at bridging the gap between the different work hierarchies, that strengthened collegiality and the spirit of collaboration, and that empowered staff to initiate plans of action. Teaching and learning, research, and services were

identified as the core business of the institution, and teams were built around these three main functions to look into several key areas that formed the pillars of their excellence, namely Quality Man, Quality Management, Quality Marketing, Quality Money, and Quality Machine. (These terms need definition and clarification as to their meaning and application in the present context.) What follows is an account of the process of intergroup development in which the five Quality groups met regularly to brainstorm and develop blueprints for the next course of action.

BUILDING QUALITY CULTURE THROUGH ISO ACCREDITATION

To demonstrate publicly their quality commitment, many organisations have pursued quality certification, such as ISO 9001, that is issued by the International Standards Organisation (ISO). What is ISO Accreditation? It is a series of quality management standards that are embraced by organisations around the world. Gaining ISO 9001 certification provides proof that a quality operations system is in place.

What motivated UM to undertake this Herculean task? The answer lay in the concepts behind the various motivation theories and their integration at UM. The goal-setting theory proposed that specific goals increase performance, and that difficult goals, when accepted, resulted in higher performance than easy goals (Robbins and Coulter, 1999). The specificity of the goal itself acted as an internal stimulus that would outperform operations with no goals or a generalised goal of 'do your best'. Having started the strengthening of the various work groups, UM accepted the government's call for all Malaysian universities to obtain the ISO Certification as very timely, as it served as a major reform initiative to improve quality and strive for excellence. In a dramatic move, the university management decided that instead of going for certification by departments like other academic institutions, thus 'eating the elephant one bite at a time' it would 'swallow the elephant whole' by working towards obtaining certification for the whole university. It was indeed a mammoth task that had to be strategically tackled.

Not Me, Not You, But Together WE Will

The main strategy is to enforce the so-called 'HEARTBEAT' concept. Recognising that the university exists to enhance human capital and development, and that its goal is excellence in human development and humanity, people are seen to be the heartbeat of UM's development. The 'We Culture' was introduced as a result and is based on the principle that together we will persevere. The slogan 'Excellence with UM' has marked the effort to inject a new spirit into university life where the community is needed to unite both hearts and souls. This view stems from the conviction that many academicians are isolationists who do not really interact with others. The culture of 'I am I, and You are You' has long been in existence in an academic institution like UM. In order for the organisation to grow, the emphasis should focus on individuals as well as the institution as a whole. Individual expertise and strength should be shared with others. It is against this backdrop that HEARTBEAT has been conceptualised. The objectives of HEARTBEAT include the establishment of a culture of excellence, an *esprit de corps*, giving priority to the client and striving for excellence in performance based on creativity, innovation and precision. One of the distinguishing features of these programs has been the novel effort to establish a strong sense of belonging and pride in the university. Although these values are not new, their constant reaffirmation is considered to be useful and important. The slogan 'My University, Your University' reflects the realisation of the inter-dependence of the whole university community in its striving for excellence.

'We Are UM, and UM is Us' and the 'We Culture' were born out of the HEARTBEAT concept. Another slogan adopted, 'Certainly Will Be Better' referred to the confidence and the efforts that UM should continue to strive for excellence in a dynamic and continuous manner in terms of human values, humanity and activities based on the principles laid out by religion, the law, and

the environment. In a nutshell, the university management was confident at the beginning of the preparation for the ISO Certification that the job could be handled because the principles of HEARTBEAT stood behind us.

This begs the question: is HEARTBEAT sufficient? Is it strong enough? What about the individuals who hear their own hearts beating louder than the heartbeats of their team members?

As the Events Unfold

Academics are professionals who have a strong and long-term commitment to their field of expertise. Their loyalty and commitment are more often to their profession than to their employer. What motivates academics? Undeniably the chief reward in their job is the work itself and some form of professional recognition.

As such, it is not only important to motivate team members at the onset of a project, but it is equally important to keep them moving through to the completion without losing heart or interest. From Robbins (2000) we are informed that the challenges of creating team players are greatest where (a) the national culture is highly individualistic, and (b) the teams are introduced into an established organisation that has historically valued individual achievement. Unfortunately, both happen to be true in the case of the teams working for ISO certification in UM.

It is also important to note that many contemporary motivation theories recognise that employees are not homogeneous. They have different needs, attitudes, personalities, and other important individual variables. It is as important to recognise that although many positive benefits may accrue from obtaining ISO or any other quality assurance certification, the key benefit to organisations comes from the quality improvement journey itself (Parisher, 1995). In other words, the goal of ISO certification should be to have work processes and an operation system in place that enables employees throughout the organisation to perform their jobs at a consistently high level.

The task of preparing for the ISO certification in UM involved many academic, administrative and support staff. A Steering Committee to coordinate the preparation and production of the documents, comprising academics from various disciplines has been set up. There are 14 committee members, including the authors, and the committee is headed by one chief quality officer. The focus is on the committee's analysis of how the team deals with tensions and issues that develop in the process of preparing the documents for ISO certification. These issues may range from conflicts within the team to motivating and demotivating factors that affect individual members.

Size of the group

The size of a group definitely affected the group's overall behaviour, but the effect was dependent on the outcomes that were focused on. It has been shown that small groups were generally faster at completing tasks while large groups were better at solving problems. The contribution of individual members tended to decrease as groups got incrementally larger and was known as the 'free rider tendency' phenomenon (Albenese and Van Fleet, 1985). The UM ISO team of 14 was large, and the free-rider phenomenon did take place. Members quickly voiced dissatisfaction over this at the weekly meetings and as a result the chief quality officer started to identify individual roles in the team and recognised individual efforts. This had a positive effect both on the individual and team performance as had been predicted by the expectancy theory. Thus, an employee might exert a high level of effort if he or she perceived that there was a strong relationship between effort and performance, performance and rewards, and rewards and satisfaction of personal goals (Robbins and Coulter, 1999). Linking this to need theories, would

have meant that motivation would be high and the rewards individuals achieved for their performance would satisfy the dominant needs that were consistent with their individual goals.

What happened with the UM team was similar to the situation presented in Robbins's (2000) description of athletes who said they wanted to be part of a cohesive team, but they also wanted their names printed on the back of their jerseys in 6-inch block letters. Thus everyone wanted a share of the cake though contributions came from a minority of the players.

Internal conflict

The team experienced differences that resulted in interference or opposition to policy. Taking the traditional view of conflict, it indicated a malfunctioning or problem within the group and therefore should have been avoided. Within the team, we had one or two members who recognised that conflict was a natural and inevitable outcome in any group. The sensitivity training through HEARTBEAT had activities on conflict resolution where interaction among members of work teams learned how other members thought and worked. Through high levels of interaction, team members learnt to increase trust and openness. As a result, the conflicts were not allowed to cause interference, but were sometimes used as a positive force to contribute to the group's performance, in line with the interactionist view of conflict which proposed not only that conflict might exert a positive force in a group but also that some conflict was necessary for a group to perform effectively.

Reinforcement factors

Reinforcement theory recognises the fact that an organisation's rewards reinforce an individual's performance (Hellreigel et al., 1999). If management has designed a reward system that is seen by employees as a so-called 'pay off' for good performance, the rewards should reinforce and encourage continued good performance. Rewards also play a key part in equity theory because individuals tend to compare the rewards they have received from the efforts they have made with the inputs-outcomes of relevant others. In the context of the UM and typically the Asian culture, employees seldom demand their rights or ask for them directly.

In the case of the UM team, which worked long hours especially in the early part of the ISO project, reinforcement came from the top management who dropped in regularly to provide moral support. Team members were visited often and hence felt that their work was valued. However, when these visits ceased as management got involved with other affairs, motivation was affected. Individuals in the team started meeting in small groups to voice concern over the lack of support resulting in meetings with management to solve existing problems. The meetings were initiated by individuals' concern over the performance of the team.

Two important issues in relation to managing teams are (a) how is it possible to evaluate the team's performance? and, (b) what type of reward system should be used? Individual performance should be evaluated and the factors that indicate how well the individual works in a team context should also be considered. Performance appraisals should include comments from peers as well as from team managers (Robbins and Coulter, 1999; Stewart, 1996). In UM, this system has been enforced as a result of team members empowering themselves to bring up concerns over issues of appraisal.

Rising to the occasion

It was noted that even if leadership had created the vision of change and communicated the purpose for the change, teams had to be trained to 'become the change we want to see'. It was felt that the plus point to the HEARTBEAT project was that hearts were touched and that the impact was deep. HEARTBEAT built relationships that emphasised and supported team goals and

integrated individual skills. It was consistently observed that the team referred to in this paper, more often than not, was able to rise to the occasion. Many problems were faced that could have beaten others but they persisted through self-empowerment and respect for individual differences and a willingness to take calculated risks.

THE JOURNEY CONTINUES

This is not in any way a success story. It is a narrative of sorts and an analysis of how an organisational strategy impacts on individuals. The different characteristics of the individuals in the teams and their coping strategies are seen to be the driving force that moves the effort forward, in addition to the constant support promised by the leadership. In this case development occurs when individual initiatives are imitated, multiplied and actively supported with the strong backing of an established supportive system. Development is taken as an activity of the institution as a whole. In a way, this paper attempts to show that though development can be stimulated, directed or assisted by policies and programs, it cannot be compelled or carried out by administrative and external agencies on behalf of others in the population. A development strategy that has the potential to work should aim to release people's initiative, not substitute for it.

The university obtained the ISO certification after one year of hard work but the quest was far from over. Before long it was realised that being certified was only a means to an end. It was the beginning of the struggle towards achieving excellence. The certification merely created an awareness of the scope and breadth of quality. The positive side of ISO certification was that there was a work system in place that reduced subjectivity and raised accountability. However there were questions that remained to be answered. Could the subjective nature of academic activity ever be structured? What compromises must be made in the process? Would creativity be hampered? Could we continue to produce cutting-edge research? As long as these questions remained, there was the possibility of continuous improvement.

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Prudent fiscal stewardship: Estimating the expected monetary value of an educational program

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Academic administrators are frequently asked to make difficult decisions related to resource allocation. Should a new academic program be approved? Should an old program be discontinued? How should resources be allocated between programs? Although resource allocation decisions are based on many factors, administrators must always consider the financial implications of their decisions. To that end, this paper illustrates one approach that administrators can use to estimate the expected monetary value of their educational programs. The paper begins by providing a brief overview of the relevant cost and revenue factors that are involved in resource allocation decisions. The paper then illustrates how a private, regional university used this approach to estimate the monetary value of an ongoing international education program. The paper concludes with a discussion of the managerial implications associated with making resource allocation decisions based on economic value.

Resource allocation, expected monetary value, budget, marketing, accounting

INTRODUCTION

The criteria used by an educational institution to evaluate its products (programs) are often more complex than those used by traditional for-profit organisations, and the bottom line is harder to define (Blocher, Chen, and Lin, 2002; Dickeson, 1999). Among the factors that can complicate the evaluative process are the not-for-profit status of the institution; a mission or vision that often includes social or community ideals; a diverse constituency base; and a complex network of interdependencies that exists between various programs being offered at the institution. Complex tradeoffs are involved in such basic decisions as supporting small classes that may enhance student learning yet are also financially more expensive.

Of the 13 million undergraduates attending college in the United States, only 400,000, or three per cent, attend for-profit schools (Sachdev, 2003). Although not-for-profit status relieves decision makers of having to provide investors with a satisfactory return on their investment, a responsible steward of the not-for-profit organisation must still manage the organisation's resources in a manner that enables it to fulfil its mission. Dickeson (1999, p. 29) described mission within the field of education as 'the academic grid against which all evaluation of programs must be measured' Although community welfare and meeting the requirements of external accrediting bodies are essential to most educational institutions, if the organisation's mission contemplates that it will be an ongoing enterprise, then administrators are compelled to consider both the intermediate and long-term financial implications on their decisions. This almost certainly comes as no surprise to any administrator who has budgetary responsibility.

In order to illustrate how an administrator can estimate the financial implications of a decision, this paper demonstrates how a private regional university calculated the expected monetary value (EMV) of one of its on-going international programs. The LBS program, as it is referred to in this paper, is an undergraduate program designed for business administration majors and minors. Faculty members from the university's College of Business apply to direct, and teach in, the program. Students apply for admission to what has become, over the years, a very competitive program. For the first three years, the program comprised one faculty member who led 25 to 30 students to study overseas for a semester. Since 1998, the program has been expanded to two faculty members who lead a group of 45 to 53 students. From the students' perspective, the cost of the program, including tuition, prearranged home stays, and airfare is very similar to that of studying for a semester at the home campus. Weekend travel and entertainments costs, however, often add substantially to the actual out-of-pocket costs for the students. Faculty assigned to the program are responsible for teaching two classes each while they are overseas. This compares to a three-course teaching load at the home campus. The university also covers the cost of housing for the faculty, transportation expenses, and miscellaneous expenses amounting to approximately \$800 per student per semester (based on 50 students).

Dickeson (1999) recommended a ten-point model of evaluating academic programs that considered external demand, internal demand, size, scope and productivity, revenue and resources generated, costs and expenses, history, quality of inputs and processes, quality of outcomes, impact and opportunity analysis. Here we focus our attention on the first five of the ten criteria, which is not to suggest or imply a necessary hierarchy of importance in the criteria but merely to render explicit the scope of our research interests. The first cluster of criteria focuses on external and internal market demand. External demand relates to whether a program draws tuition revenue into the institution. A prospective student's decision to matriculate to the university or perhaps to choose a particular major within the university is an example of external demand. Internal demand relates to whether a program creates enough interest in the mind of a student already enrolled in the university to continue at the university rather than to consider leaving. This idea of internal demand is often referred to in the academy as 'retention'

The second cluster focuses on three criteria that are closely related to profitability or contribution analysis. The three criteria are (a) size, scope, and productivity; (b) revenue and resources generated; and (c) costs and expenses. In addition, Dickeson (1999) included a number of subcategories of revenue. One, entitled 'potential revenue,' posits that programs of any type, but especially those that involve a unique experience, may create the type of commitment to the institution that results in future gifts or bequests.

Tools of Financial Analysis

The framework used to analyse a program also depends upon whether the program is proposed or is currently being offered by the institution. Although the financial implications of both newly proposed and ongoing programs are of concern to academic administrators, the focus here is on the analysis of existing programs. We begin with a brief discussion of the most basic components of such an analysis.

Revenues

The most basic financial analysis of a program begins with an identification of its associated incremental revenues – revenues that would not arise if the program were not offered. For example, in a program such as LBS, incremental revenues are, in part, comprised of the stream of tuition dollars paid by students who matriculate to an institution as a direct consequence of the availability of the program (whether or not they eventually apply for or are accepted into the program), as well as any revenues retained through improved retention rates. The revenue stream

is, of course, much more complicated in that it may also include room and board, miscellaneous registration fees, bookstore sales, and future alumni donations. In addition, there may be indirect revenue benefits (e.g., friends who matriculate with students who are attending the institution due to the availability of the LBS program) as well as positive word-of-mouth effects on other potential students. Although it may not be practical to estimate all sources of revenue, it is important to understand the revenue and cost implications of a particular analysis in order to assess whether the final financial estimate tends to overstate or understate a program's actual monetary contribution.

Costs

The term 'cost assignment' is the process of first assigning costs (or cost elements) to cost pools, then from cost pools to cost objects (Blocher et al., 2002). Cost pools are meaningful groups of costs defined by an institution for the purposes of managing its programs. Cost pools may be defined by type of cost, source of cost, or responsibility for managing cost. Once pooled, cost assignment becomes the assigning of costs to cost objects, namely, products, services, or other organisational units to which costs are assigned. Here, the cost object is the program under analysis, such as the LBS program.

Relevant costs are those costs that differ between alternatives, such as between two programs or between offering and not offering a given program. Relevant costs are avoidable costs. The capture of relevant costs can at times be more challenging than the capture of revenue information, such as how to treat costs that have already been incurred (e.g., sunk costs). Since the costs have already been incurred, they are unavoidable and therefore not relevant. For example, it is often necessary to incur costs when starting a new program, such as creating an effective and efficient system for managing the program, creating program awareness, and purchasing new equipment. Yet another challenge is the consideration of opportunity costs or the benefits foregone by choosing one alternative over another. For example, when faculty teach in the LBS program they are not, as a consequence, teaching or providing services back at their home campus.

Once relevant costs are identified, they are classified as direct or indirect. A direct cost is easily associated with the program. The cost of copying materials for students in the program would likely be considered a direct cost. An indirect cost is one not as easily associated with a program, for example the university president's salary.

Another cost analysis tool is the consideration as to whether a cost is variable or fixed. A variable cost is one that changes with the level of activity – yet is fixed in relation to each unit of activity. The copying mentioned in the previous paragraph is a variable cost – the more students in a class, the more copying required. Each student receives the same number of copies, so the cost per student is fixed. A fixed cost is one that does not vary with the level of activity – thus, on a per-unit basis, it varies inversely with the level of activity. Faculty pay is an example of a fixed cost – the cost is the same whether one or thirty students enrol. However, as more students enrol, the cost per student decreases.

The 'variable/fixed dichotomy' is often an oversimplification, and other elements of the nature of costs must also be considered. For example, while the faculty cost is, in one sense fixed, it is variable once a 'relevant range' is exceeded. Costs that must be purchased in such increments are 'structural costs' if they must be purchased in large blocks, for example tenured faculty contracts, whereas costs that can be purchased in smaller, more manageable increments are 'executorial costs' (Blocher et al., 2002). Consider for example the case in which a program impacts the teaching load of faculty. In the LBS program, faculty teach two as opposed to three classes. As a consequence, the university must hire someone to teach the class that the faculty member would

otherwise teach. In many cases, adjunct faculty members are used to supplement the teaching shortfall, hence minimising the net replacement expense for the institution.

As might be expected, some costs are easier to capture than others. While acknowledging the importance of all costs, the focus is on attention on more of the concrete costs.

Analysis of Existing Programs

A common approach to analysing the financial viability of a program is to determine its contribution margin by subtracting variable costs from revenues. Contribution margin is the amount a program contributes to meeting the fixed costs of the educational institution. Those fixed costs that are identifiable to the program can also be subtracted from contribution margin to arrive at a net income-type value, what we are calling the 'Expected Net Monetary Value' of a program (EMV). The costs included in such an analysis are direct costs only, with no allocation of indirect costs.

It is the identification of the fixed costs of a program that often becomes problematic. Such an analysis typically involves an allocation of an institution's common fixed costs (e.g., the president's salary) to the program. While this may be appropriate in gaining an understanding of what programs can be said to carry the weight of institutional fixed costs, such an allocation is not appropriate in making a decision regarding the continued viability of a program. Such an allocation of the institution's common fixed costs assumes that some portion of the president's salary would no longer be incurred if the program were discontinued – an inaccurate assumption. The determination of EMV must include a subtraction from contribution margin of only relevant fixed costs – fixed costs that will no longer be incurred should the program be discontinued.

This paper approaches the analysis of a program from the perspective of both the university and the operating unit (e.g., college). The proper method of analysis is first to determine the EMV of the appropriate entity (university or operating unit) 'with' and then 'without' the specific program. If the entity's EMV is greater with the program, it should be kept. If the EMV is greater without the program, it should be discontinued, notwithstanding mission-related justifications. The inclusion of allocated common fixed costs, as discussed in the prior paragraph, often apportions an amount of common fixed costs to a program making it appear to have an unfavourable EMV. However, as the common fixed costs (e.g., the president's salary) would be present even if the program were discontinued, those common fixed costs would have to be covered without the contribution margin of the discontinued program. In summary, the costs relevant to a decision to keep or drop an existing program are direct costs: direct variable costs or direct fixed costs.

As previously mentioned, EMV can be calculated for a course offering, a program, a major, or effectively used to facilitate decision making at any level within a given operating budget. It should be noted that when different units of analysis are used, it might result in different decisions concerning the viability or desirability of a given program depending on how costs and revenues are captured for a program. For example, the typical LBS student takes two courses that are designated College of Business courses, one designated College of Arts and Sciences, and one designated 'interdisciplinary'. Thus, two courses of the four, or one-half of the tuition revenues related to the program could be assigned outside of the College of Business. If all of the costs of the program are assigned to the College of Business, then the College of Business has been burdened with 100 per cent of the costs while only being assigned 50 per cent of the revenues.

As a consequence, a program that is costly for the operating unit is overall beneficial for the university. Conversely, if costs are not allocated properly, an operating unit might be encouraged to adopt programs that generate positive cash flows for the operating unit but are costly to the institution at-large.

LBS ILLUSTRATION

In order to illustrate how to calculate the expected monetary value (EMV) of an educational program, a survey was conducted to evaluate the incremental value of an ongoing international program at a regional university. Specifically, three economic issues were assessed. First, to what extent did the availability of an international program impact on the choice of a student to matriculate to a particular university? Second, what impact did the program have on student retention? Finally, what impact did the program have on the student's choice of a major within the university and as a consequence the operating budget of a particular academic unit?

METHODOLOGY

Fifty-four juniors participating in a semester-long study abroad program were asked to evaluate the impact that the program had on their choice to attend and subsequently remain at the university. To this end, a seven-item survey instrument using an incremental scale was administered to assess the impact of the LBS program on the students' decisions. In addition, students were asked to evaluate the extent to which the availability of the academic program impacted their choice of a particular major. Data were also collected pertaining to when the students became aware of the program (pre or post-matriculation) and whether they entered the university as freshmen or as transfer students.

The expected revenue (ER) of the program is specifically calculated using the following formula(s):

Equation 1.1. Expected Revenue of a Program

$$\begin{aligned} ER_P = & (P_{Mat_n} * Y_n * T_n) + (P_{Ret_n} * (Y_n - 1) * T_n * (1 - P_{Mat_n})) + \dots \\ & \dots + (P_{Ret_x} * (Y_x - 1) * T_x) \end{aligned}$$

where

n = number of students aware of program before matriculation;

X = number of students unaware of program before matriculation;

T = average tuition per student per year (net of any tuition discounts);

Y = number of years expected to complete degree at the university after being admitted (for the purposes of this study it was assumed that for entering freshman Y = 4 and for transfer students Y = 3; this analysis also assumed that after matriculation students stay at least one year before retention becomes an issue);

P_{Mat_n} = probability of matriculation attributable to program of interest;

P_{Ret_n} = probability of retention of students that were aware of the program before matriculation;

P_{Ret_x} = probability of retention of students that were not aware of the program before matriculation;

ER_P = expected revenue value of a program.

The ER formula comprises three distinct components. The first component of the formula is represented by the sum of ($P_{Mat_n} * Y_n * T_n$). In this section, an estimate of the program's impact on matriculation is calculated. For those students who are aware of a program before matriculation, the probability that the program impacted their decision to matriculate is multiplied by the total number of years that the student is expected to be at the university (in the case of a freshman – four years), that product is then multiplied by the annual net tuition revenue per student. In this example, the tuition is net of any internal discount given by the financial aid office (e.g., net of any tuition reduction offered to attract students to the university).

The second revenue component of the formula is represented by the sum of ($P_{Ret_n} * (Y_n - 1) * T_n * (1 - P_{Mat_n})$). Although the first part of the formula, given by the sum of ($P_{Mat_n} * Y_n * T_n$) accounts for the effect of matriculation, it does not account for the value of the program on retention. In this part of the formula we take the student's estimate of the probability that the

program impacted on their decision to remain at the university times the number of years that retention is an issue for the student. The formula assumes that retention is not an issue during the student's first year at the university but impacts equally on the student's remaining years at the university.

The formula then multiplies the probability of retention by the product of relevant years at the university multiplied by net tuition dollars. Again, in the current example, the revenue stream is net of tuition discounts. Finally, since an estimate is already included in the ER for the probable value of matriculation, it is necessary to subtract the probable impact of matriculation from the retention estimate. This is accomplished by multiplying the derived retention value by that portion of the tuition revenue not previously accounted for in the matriculation estimate, or multiplying the retention value by one minus the probable impact of matriculation. In order to help illustrate this, consider the following three examples. If the student assigned a zero probability to the program's impact on matriculation but assigned a 30 per cent impact on retention, the full value of the impact of the program on retention is accounted for. By contrast, if an entering freshman attributes a 50 per cent impact on matriculation, and a 50 per cent impact on continuing retention, the net retention impact is adjusted as follows: 0.5 (probable impact on retention) x 3 (eligible retention years) x Net Tuition x 0.5 (one minus 0.5 or the discount assessed so as not to double count the matriculation effect). Finally, if a student attributed a 100 per cent probable impact on matriculation, then any attributed impact on retention is mute since the student would never have attended the university if not for the program of interest.

The third and final component of ER is represented by the sum of $(P_{Ret_x} * (Y_x - 1) * T_x)$. In other words, for those students not aware of the program before matriculation, the student's assessment of the probable impact of the program on retention is multiplied by the number of relevant years at the university times the university's net tuition.

The sum of all three components, summed across all students, is the derived incremental value (ER) for the program of interest.

Equation 1.2. Expected Net Monetary Value of a Program

$$EMV_p = ER_p - DC_p$$

where

ER_p is defined by Equation 1.1;

DC_p is defined as sum of the direct costs of the program;

EMV_p = Expected Net Monetary Value of a Program;

The expected revenue of a program at the level of an operating unit (e.g., college, school, major, etc.) is calculated using the following formula:

Equation 2.1. Expected Revenue Value at the Level of the Operating Unit

$$ER_O = \sum_{n=1}^N (P_{Mat_n} * A_n * C_n) + \sum_{n=1}^N (P_{Ret_n} * A_n * C_n * (1 - P_{Mat_n})) + \dots$$

$$\dots \sum_{x=1}^X (P_{Ret_x} * A_x * C_x) + \sum_{x=1}^X (P_{Maj_x} * A_x * C_x * (1 - P_{Ret_x}))$$

where

n = number of students **aware** of program before matriculation;

X = number of students **unaware** of program before matriculation;

A = Average tuition cost per course (net of any tuition discounts);

C = average number of operating unit courses within a major or within the operating budget of the academic unit making a decision based on the EMV;

P_{Mat} = probability of matriculation attributable to program of interest;

P_{Ret_n} = probability of retention of students that were aware of the program before matriculation;

P_{Ret_x} = probability of retention of students that were not aware of the program before matriculation;

P_{Mat_n} = probability of program impacting choice of major for those aware of the program before matriculation;

P_{Maj_x} = probability of program impacting choice of major for those unaware of the program prior to matriculation;

ER_o = expected revenue value of a program at the operating unit level.

The ER formula for the operating unit comprises four distinct components. The first three components mirror that of Equation 1.1 except that the revenue portion of the formula is based only on the courses offered within the operating unit. The fourth component, however, measures the value associated with the probability that a student will major in a subject as a consequence of a particular academic offering. This estimate is represented by the sum of ($P_{Maj_x} * A_x * C_x * (1 - P_{Ret_x})$). Since an estimate is already included in the ER for retention, it is again necessary to subtract the probable impact of retention from the estimate of the value of majoring in a particular subject. This is accomplished by multiplying the choice of major estimate by $(1 - P_{Ret_x})$.

Equation 2.2. Expected Net Monetary Value at the Level of the Operating Unit

$$EMV_o = ER_o - DC_o$$

where

ER_o is defined by Equation 2.1;

DC_o is defined as sum of the direct costs of the program appropriately attributed to the operating unit;

EMV_o = expected net monetary value of a program at the level of the operating unit.

RESULTS

Fifty (50) students of 54 who were enrolled in the LBS program agreed to participate in the current study resulting in a response rate of 93 per cent. Eighty-eight percent of the respondent pool entered the university as a freshman and 60 per cent of the students were female. Thirty-four per cent of the students were aware of the LBS program before matriculating and 88 per cent of these students stated that the availability of the LBS program had an impact on their decision to attend the university. Of those aware of the LBS program prior to matriculation, the probable impact varied from 0 to 80 per cent with an average of 32 per cent. For those aware of the LBS program prior to matriculation, women attributed a 37 per cent average impact due to the program compared to only 21 per cent for the men in the group.

Respondents also cited the program as having an impact on their decision to remain at the university. For the group that was aware of the LBS program prior to matriculation, 82 per cent of the students stated that the program had an effect on their decision to remain at the university. The impact on retention varied between 0 and 80 per cent yielding an average impact of 41 per cent. For the group that learned about the international program after matriculating, approximately half indicated that the LBS program had an impact on their decision to stay at the university. The impact on retention varied between 0 and 90 per cent yielding an average impact of 24 per cent. When evaluating the program's overall impact on retention (pre- and post-matriculation groups), the program impacted on men's decision to remain at the university slightly more (34 per cent) than that of women (26 per cent).

Fifty-six per cent of the group reported that the international program had an impact on their choice to major in business. The impact of the program to major in business ranged from 0 to 90

per cent with an average impact of 22 per cent. For those aware of the LBS program prior to matriculation, the impact on choice to major in business was 25 per cent and for those who became aware after matriculation the average impact was 21 per cent. There are, however, greater differences when accounting for gender. For the group aware of the LBS program prior to matriculation, the average impact on the student's decision to major in business was 15 per cent for men and 30 per cent for women. For the group that became aware of the LBS program after matriculation, the average impact on the student's decision to major in business was 18 per cent for men and 24 per cent for women. Given that the LBS program is open to all business students, no attempt was made to assess the impact of the program on the student's choice of specialties within business.

The overall net tuition revenue (ER) that could be attributed to the LBS program, adjusted for the non-response bias in the sample, was estimated to be approximately \$885,000 over the duration of the students' enrolment at the university. Net tuition revenue was calculated by subtracting internally funded scholarships from the published tuition rates for the university. For those students who were aware of the program prior to matriculation, the revenue contribution was estimated to be approximately \$526,000 and for those who became aware of the program after matriculation the additional retention benefits equalled \$359,000. In other words, the university attracted and retained \$526,000 of incremental revenue by virtue of students selecting the university due to the availability of the LBS program and further retained \$359,000 of incremental revenue due to students staying at the university after learning about and participating in the LBS program.

At the operating budget level (College of Business), considering only the tuition revenue that could be attributed to the business courses that were taken by students, adjusted for the non-response bias in the sample and internally funded scholarships, the net tuition revenue (ER) impact of the LBS program was estimated to be approximately \$299,000. For those students who were aware of the program prior to matriculation, the revenue contribution was estimated to be approximately \$123,000 and for those who became aware of the program after matriculation the retention benefits equalled \$176,000.

The EMV of the LBS program was provided by Equation 1.2 (for the university at-large) and by Equation 2.2 (for an operating unit within the university). The direct costs for the LBS program were calculated to be approximately \$425,000. These costs included such items as housing and program fees for students while they were studying overseas, faculty housing and transportation expenses, group activity funds, teaching and adjunct faculty support and miscellaneous direct administrative support costs. Given the above information, the EMV for the university was equal to \$885,000 (total ER) minus \$425,000 (total direct costs), or \$460,000 net contribution to the university. It is interesting to observe, depending upon how the costs of this program were assigned, the EMV for the College of Business might have been calculated to be \$299,000 (ER for the College) minus \$425,000 (total direct costs) or a net loss of \$126,000. In this particular example, however, there has been a failure within the accounting system to match accurately costs with revenues. Nevertheless, if the operating unit decision maker did not recognise the mismatch, he or she might inadvertently cancel the program and as a consequence harm the financial well-being of the university. This assumed, of course, that the decision maker was only focusing on financial criteria and not other mission related factors.

LIMITATIONS

The method discussed above involves a number of important limitations and considerations. First, the ER and EMV calculations are based only on those students who were selected to participate in the LBS program. Since 88 students initially applied for the LBS program and only 54 were selected, it is possible that this study understates the true economic value of the LBS program.

For example, assuming that the findings of the current study could be generalised to the entire applicant pool, the current results would understate the ER and EMV of the program by an amount equal to the ratio of those students who failed to be accepted divided by the total applicant pool.

Equation 3. Expected Incremental Revenue Generalised to the Total LBS Applicant Pool

$$ER_{TAP} = \frac{ER}{[1 - (B/A)]} = \$885,000/[1-(34/88)] = \$885,000/(1-0.39)$$

$$ER_{TAP} = \$1,451,000$$

$$EMV_{TAP} = ER_{TAP} - DC_O = \$1,451,000 - \$425,000 = \$1,026,000$$

where

A = applicant pool;

B = students that applied but were not selected for the program;

ER_{TAP} = expected revenue (monetary) value of the respondent pool;

DC_O is defined as sum of the direct costs of the program (this should be the same as calculated for within Equations 1.2 and 2.2);

EMV_{TAP} = expected revenue (monetary) value of the total applicant pool.

A follow-up analysis of students who applied but were not accepted into the LBS program revealed that 11 per cent of those rejected subsequently dropped out of the university. Eighteen per cent (18%) of those students who were not accepted into the LBS program applied for and subsequently participated in other semester long study abroad programs. In addition, 21 per cent of those students not accepted participated in a short-term (one month) study abroad program. From a managerial perspective, given that many students are determined to study abroad, the relevant questions become (a) whether administrators want to influence the type of programs in which students participate and (b) whether students participate in international programs offered by their current university or whether students seek opportunities elsewhere.

If one were to generalise the LBS program's ER to the total applicant pool (as given by equation 3), the EMV for the university is \$1,451,000 minus \$425,000 or \$1,026,000 net contribution to the University. At the college level, the adjusted ER would be \$299,000 divided by (1- 0.39) or a total of \$490,000. If total direct costs of \$425,000 are then subtracted, the result is a positive monetary value of \$74,000 for the college. Even though the college program is now shown to be profitable, the EMV estimate for the college still understates the value of the program to the university as a consequence of the mismatch between costs with revenues.

It is also possible that the estimate of the ER and EMV for the program is further understated to the extent that there are students who decided to attend the university due to their initial interest in the LBS program but later decided not to apply to the program. The estimate also does not consider the word-of-mouth effects that may have accrued as a result of a students' interest in the university due to the international study opportunity.

Three additional limitations or potential criticisms of the current illustration relate to 1) the timing of the data collection, 2) the method used to estimate the probabilities associated with retention, choice of university and the selection of the student's major, and 3) assumptions related to the type of decision making model used by the students, for example, compensatory versus non-compensatory models of choice (Arnould, Price, and Zinkhan, 2004).

With regard to the timing of the data collection, an arguably better point to assess what attributes contributed to a student's choice to attend a particular university would be at the time of matriculation. In this case, it would also be possible to calculate the ER and EMV for a program

for all entering students, at least to the extent of the program's impact on students who are aware of the program prior to matriculation.

The process of estimating probabilities of choice is also fraught with difficulty. The method used in this study employed a single incremental scale that, although relatively straightforward and easy to use, does not provide for any direct measurement of validity. While using multi-trait, multi-method instruments would provide certain advantages, as a working administrative model the tradeoffs between parsimony and complexity must be carefully considered.

Finally, assuming that the choice to attend a particular university is a high involvement decision (Costley, 1988), consumer research would suggest that most students are using some form of compensatory model of choice (Gensch and Javaligi, 1987; Wright, 1976). Although there is evidence (Reilly and Holman, 1977) that consumers will, on occasion, use the non-compensatory choice model, or even a hybrid of the two, for the purpose of estimating the EMV or ER of a program, the compensatory model will yield the most conservative estimates. If a student were using a non-compensatory choice model, she or he might very well eliminate a university from further consideration if the school did not offer an opportunity in which the student was interested, even if the opportunity was relatively unimportant. In other words, the absence of any characteristic of comparative value might be reason to eliminate the school from consideration.

In the current illustration, non-zero probabilities simply reduce the chances of a student attending a particular school but do not eliminate it from further consideration. Although it remains an interesting empirical question as to which choice model students use when selecting a school to attend, the assumption that most students use some form of a compensatory decision rule is supported by the literature.

Additional criticisms of the proposed method for calculating EMV might note that the model fails to consider such intangibles as the learning value of a program or how it contributes to the overall mission of the institution. There may also be interaction effects between programs (a highly valued program may benefit from or even depend upon a less valued program). The current EMV calculation also does not consider issues related to strategic fit. However, the broader methodology of articulating costs and benefits proposed here is believed to be robust enough to accommodate these issues while allowing for the further development of the proposed model. From an incremental perspective, although the information derived from the proposed methodology will result in better decisions, it cannot guarantee perfect choices.

The current paper also focuses attention on the evaluation of existing programs. Future research should incorporate a discussion of how to evaluate new or proposed programs in order to give administrators a more comprehensive budgeting model to use when making resource allocation decisions.

In this paper we have also not included a discussion of sensitivity analysis. It is, however, clear that certain variables within the equation are more sensitive to variation than other factors. As a consequence, sensitivity analysis would be a valuable tool in an overall risk assessment and an area for further development.

SUMMARY AND CONCLUSIONS

The purpose of this study is to illustrate how administrators can develop a measure of the expected incremental revenue and the expected net monetary value for current educational programs. To that end we discuss the opportunities and challenges of conducting such an analysis within a not-for-profit setting. A brief overview of financial tools is provided and an actual case is used to illustrate the process. Although this paper does not specifically address newly proposed programs, much of the basic reasoning developed will also apply to evaluation of new programs.

Equipped with this information, in combination with mission, strategy and related stakeholder constraints, administrators will be better prepared to make difficult resource allocation decisions.

The financial analysis also lends itself to identifying potential marketing opportunities. Consider, for example, the LBS illustration developed within this paper. Given the positive incremental contribution of the LBS program, it would be to the advantage of the institution to promote the program more heavily to potential students, particularly those students who have not yet matriculated to the university. Gender differences suggest that women are attracted to this particular kind of program more than men, which either suggests that effort could be targeted towards those who are already more sensitive to this type of program or, conversely, placing more emphasis on men in order to balance out the applicant pool. Although the LBS program has a positive impact on both men and women's retention, it is noteworthy, especially given that more women are applying to college these days than are men, that the LBS program has a much stronger impact on men's retention rates than that of women.

In conclusion, we want to caution administrators to look at the financial implications of their decisions from both a university and operating perspective. As is illustrated, it is possible that an operating unit might erroneously make a decision to drop or retain a program if there is a mismatch between costs and revenues. Prudent fiscal stewards must consider not only the revenue and cost implications of decisions within their own operating units but also on the organisation as a whole. In the final analysis, professionalism demands that we make well-informed decisions from a community, as opposed to self-interest perspective (Kennedy, 2002).

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Analysing education production in Malaysia using canonical correlation analysis

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Data from the Third International Mathematics and Science Study carried out in 1999 and canonical correlation analysis were used to investigate the effects of school inputs, environmental inputs and gender influence in the production of a joint educational production function in mathematics and science subjects for eighth grade students in Malaysia. School inputs include per pupil non-teaching expenditure, pupil teacher ratio, teaching experience and instructional hours. On the other hand, environmental inputs consist of home educational resources index and an out-of-school study time index. Gender influence is represented by the percentage of female students in a class. From the study, teaching experience can be dropped from the model because it does not give any additional explanatory power. Marginal products and marginal rates of substitution are calculated and it was found that schools with low-level out-of-school study time can compensate for these deficiencies by having extra instructional hours.

Education production, canonical correlation analysis, marginal rates of substitution, marginal products, school achievement

INTRODUCTION

Education has always been regarded as a vital factor in achieving the general aims of society. In order to achieve this aim, the Malaysian Government (Government of Malaysia, 1996) has placed special priority on improving the educational quality especially in science programs, and efforts are made to increase the number of students in this area of study. Additional emphasis is placed on continuing to improve the quality of and access to schools in underserved areas. This includes expanding the hostel program for students from rural areas, amalgamating small schools, providing incentives for teacher training, and encouraging private sector activities in education.

Mathematics and science education in primary and secondary schools are the most important factors in the promotion of science capacity building of any country. It enables countries to build an indigenous science based on solid foundation. Consequently, an investigation on how school and environment inputs into the educational production process affects student performance in Mathematics and Science education in Malaysian secondary schools become a very interesting and important study. Furthermore, Hanushek (1979) noted that science professors found that students' performance in mathematics is correlated with their performance in science. Hence education production could be treated as a joint production between performances in these two subjects.

As outlined by O'Sullivan (2000), school achievement depends on five inputs: the school curriculum, educational equipment, the classroom teacher, the home environment, and the

achievement level of the child's classmate. In general, these five inputs to the production function can be divided into three groups: school resources, environmental inputs and peer group effects. In this study, only the effects of school resources, environmental inputs, and gender influence on students' achievement in mathematics and science subjects are investigated. This is due to unavailable data on peer group effects. School resources or inputs include non-teaching recurrent expenditure, teachers with more than five years experience and yearly school hours spent on instruction. On the other hand, environmental inputs include students with at least medium level in home educational index and students with at least medium level in out-of school study index.

There are long debates on the effect of school expenditure on student performance. Hanushek (1986, 1989) posed a major conclusion that there is no relationship between school expenditure and student performance. However, many researchers refuse to accept Hanushek's conclusion and claimed that these findings are based on poor data and inappropriate use of statistical methods. A more refined set of studies carried out by Greenwald et al. (1996), Jacques and Brorsen (2002) and Summer and Wolfe (1977) found that expenditure is one of the factors in influencing students performance.

According to a study carried out by Monk (1994), teachers' experience has a positive impact on performance of students in lower level studies. Many studies (Murnane and Phillips, 1998; Rivkin et al., 1998) noted that students learn more from experienced teachers (those with at least five years of experience).

Carroll (1963) suggests that the time-spent learning and the time needed by a particular student to learn, are crucially important factors influencing achievement. However, both analytic and empirical results suggest extreme caution in viewing increased instructional time as an efficient method for increasing student achievement (Levin and Tsang, 1987).

One of the major ways that students can consolidate and extend classroom learning is to spend time out-of-school studying or doing homework in school subjects. Lewis and Seidman (1994) estimated that if the United States lengthened its school year by three weeks and assigned required summer mathematics homework, it would raise the academic achievement of their students.

One of the variables used to proxy family background is the number of books in the home (Cooper and Cohn, 1997). The existence of books, magazines, encyclopaedias and newspapers is often a sign of a dedication to learning in the household. Researchers have reported that these reading materials are important aspects of the overall home environment.

Brown (1991) found that boys learned significantly more in mathematics while girls learned more in reading. Hence, gender should also be included as one of the factors influencing students' performance in science and mathematics.

This paper uses data from national sources and the Third International Mathematics and Science Study – Repeated (TIMSS-R)¹ carried out in 1999 and employs Vinod's adaptation of Hotelling's Canonical Correlation Analysis (Vinod, 1968) to measure whether school resources and home environment contribute significantly to the production of educational outputs. Canonical correlation analysis is employed because several studies published in the 1980s and 1990s in the United States have argued that in the presence of joint production, ordinary least squares regression (OLS), or even a simultaneous equations system, gives inconsistent estimates. The problem with estimating a regression equation when there are two or more dependent variables is substantially solved by Vinod (1968) by using canonical correlation analysis. Through this

¹ Data are available at <http://timss.bc.edu>. TIMSS is an educational research project conducted by the International Association for the Evaluation of Educational Achievement (IEA), to investigate student achievement in Mathematics and Science in about 40 countries around the world.

technique it is possible to estimate directly a multiple production function, as an implicit function of all the products and inputs. Chizmar and Zak (1984) and Gyimah-Brempong and Gyapong (1991) have also used canonical regression to estimate the joint education production process in the United States.

DATA

In Malaysia, the TIMSS-R sample contains data for 150 schools with a population of 5,713 students. The school samples were selected using a simple random sampling method from all secondary schools in Malaysia including public and private Islamic secondary schools. A single classroom of Form 2² lower secondary students is chosen randomly from a number of Form 2 classes in each selected school. After excluding missing values and making necessary corrections, data from 131 schools and 4,854 students are used for this study.

Educational outputs

Educational outputs are measured by school average standardised test scores in mathematics (MATH) and science (SCIENCE) in the TIMSS 1999 for Form 2 students. The school average standardised test scores are calculated by the mean score of standardised test score in mathematics and science from all participants in each sampled school. Because the test scores used in this analysis are given only to Form 2 students, it is necessary to provide an outcome for lower secondary education. The estimation is conducted in level form because the prior achievement of students for value-added estimation is not available.

School inputs

The four variables that were used to represent school inputs are per pupil non-teaching expenditures (PPNTE), pupil teacher ratio (PTR), teaching experience (TE), and instructional hours (INSHRS). PPNTE is obtained by averaging the total expenditures of library facilities, counselling services, other recurrent and miscellaneous expenses on the total school enrolment. According to Jacques and Brorsen (2002), test scores were negatively related to expenditure on student support. Thus negative relationships between PPNTE and student achievements in Mathematics and Science are expected.

PTR is the pupil teacher ratio in a school. The total number of teachers is derived by assigning 1 to a full-timer and 0.5 for a part-timer. For each school, PTR is calculated as the total school enrolment divided by the total number of teachers. Assuming that students learn less in a bigger class, a negative relationship is expected between PTR and the educational outputs.

The percentage of teachers with more than five years experience is represented by TE. A positive relationship is anticipated since students are expected to learn more from experienced teachers.

The influence of instructional hours on students' performance in these two subjects is considered by INSHRS, the percentage of yearly school hours spent on instruction. It also implies the effectiveness of schools in optimising the school hours on instructional work. It is obtained by dividing the total of yearly instructional hours excluding lunch breaks, study hall time and after school activities by total school hours in a school year. Brown and Saks (1987) found that more instructional hours in classrooms do increase learning and hence a positive relationship is expected.

² Form 2 is equivalent to eighth grade.

Environmental inputs

In our study, home educational resources index (HER) and an out-of-school study time index (OST) are used to represent environmental inputs. HER was derived from students' reports on the availability of books in the home; educational aids in the home (computer, study, desk/table for own use, dictionary); and their parents' education. It is defined as the percentage of students or participants with at least medium level in home educational resources index. A positive relationship is expected indicating that academic support in the home environment encourages learning.

OST is the percentage of students with at least a medium level out-of-school study time index and it takes into consideration the relationship between time spent doing homework and school average performance in mathematics and science. A positive relationship indicates that as the amount of time a student spends on doing his or her homework increases, academic achievement improves.

Gender influence

The gender influence is considered by including in the analysis the FEMALE variable as the percentage of female students in class.

The analyses were carried out using the Statistical Package for Social Science (SPSS) version 10.0 and Stata version 11.1.

THE MODEL

The joint production function of a generalised Cobb-Douglas form, can be written as:

$$\text{MATH}_1^{\alpha_1} \text{SCIENCE}_2^{\alpha_2} = \beta_0 \text{PPNTE}_1^{\beta_1} \text{PTR}_2^{\beta_2} \text{TE}_3^{\beta_3} \text{INSHRS}_4^{\beta_4} \text{HER}_5^{\beta_5} \text{OST}_6^{\beta_6} \text{FEMALE}_7^{\beta_7} \mu \quad (1)$$

where

MATH	=	School average standardised mathematics test scores,
SCIENCE	=	School average standardised science test scores,
PPNTE	=	Per pupil non-teaching recurrent expenditure (RM),
PTR	=	Pupil teacher ratio,
TE	=	Percentage of teachers with more than five years experience,
INSHRS	=	Percentage of yearly school hours spent on instruction,
HER	=	Percentage of students with at least medium level in home educational resources index,
OST	=	Percentage of students with at least medium level in out-of-school study index, and
FEMALE	=	Percentage of female students in class.

μ is a stochastic error term, γ and α_p, β_q are coefficients to be estimated.

Rewriting equation (1) by taking the natural logs gives

$$\alpha_1 \ln \text{MATH} + \alpha_2 \ln \text{SCIENCE} = \beta_1 \ln \text{PPNTE} + \beta_2 \ln \text{PTR} + \beta_3 \ln \text{TE} + \beta_4 \ln \text{INSHRS} + \beta_5 \ln \text{HER} + \beta_6 \ln \text{OST} + \beta_7 \ln \text{FEMALE} + \ln \mu$$

since β_0 is an efficiency index ($0 < \beta_0 \leq 1$) where $\beta_0 = 1$ if and only if production is technically efficient.

The marginal elasticity (ME) between MATH and PPNTE is

$$\text{ME}(\text{MATH}, \text{PPNTE}) = \frac{\partial \ln \text{MATH}}{\partial \ln \text{PPNTE}} = \frac{\beta_1}{\alpha_1}$$

and the corresponding marginal productivity (MP) is

$$\text{MP}(\text{MATH}, \text{PPNTE}) = \frac{\text{MATH}}{\text{PPNTE}} \text{ME}(\text{MATH}, \text{PPNTE})$$

From MP, the marginal rates of technical substitution (MRTS) between inputs, for example between PPNTE and PTR, can be calculated as follows

$$\text{MRTS}(\text{PPNTE}, \text{PTR}) = \frac{\text{MP}_{\text{PTR}}}{\text{MP}_{\text{PPNTE}}}.$$

The MEs and corresponding MPs and MRTS with respect to the other inputs are similarly defined. The marginal rate of transformation (MRT) between the two outputs is

$$\text{MRT}(\text{MATH}, \text{SCIENCE}) = \frac{\partial \ln \text{MATH}}{\partial \ln \text{SCIENCE}} = -\frac{\alpha_2 / \text{SCIENCE}}{\alpha_1 / \text{MATH}}.$$

RESULTS

Table 1 shows the mean values and standard deviation as well as the skewness of each variable considered in the analysis. It is not surprising that the mean scores for mathematics and science are around 50 since the scores used in this study are standardised test scores. Data on instructional hours, home educational resources and out-of-school study time are slightly negatively skewed. All of the distributions of the other variables are approximately normal. It should be noted that the mean percentages for INSHRS, OST and HER are on the high side, suggesting most of the students in schools under this study had very high instructional hours, out of school study time and home educational resources.

Table 1. Description of school outputs, school and environmental inputs and gender influence

Variables	Mean	Standard Deviation	Skewness
School Outputs			
Mathematics Score (MATH)	50.14	7.25	0.07
Science Score (SCIENCE)	50.01	6.54	0.18
School Inputs			
Per Pupil Non-teaching Expenditure (PPNTE)	66.74	1.05	0.33
Pupil Teacher Ratio (PTR)	19.12	3.01	-0.20
Teacher Experience (TE) (%)	44.71	23.17	0.30
Instructional Hours (INSHRS) (%)	92.78	5.87	-0.57
Environmental Inputs			
Home Educational Resources (HER) (%)	72.22	18.51	-0.83
Out-of-School Study Time (OST)	96.73	3.90	-1.13
Gender Influence			
Female Students (FEMALE) (%)	53.97	18.05	1.68

N = 131

The estimation results of the generalised production function using Vinod's procedure are given in Table 2 for four different models. Model 1 contains all of the variables discussed. On the other hand, Model 2 takes into account all of the variables except TE. Model 3 is the results after deletion of INSHRS and Model 4 is the model without TE and INSHRS. For all of these models, the canonical estimates are significant overall, which support the hypothesis of jointness in the education production. The canonical redundancy analysis (R_d) did not differ significantly between these four models which are just over 50 per cent, indicating that more than 50 per cent of the total variance for mathematics and science are explained by these variables.

All of the parameter estimates have the expected signs and the magnitude of the coefficients express the importance of an input from independent canonical variates with regard to the dependent canonical variates in obtaining a maximum correlation between sets. Both TE and INSHRS show a relatively small value in their parameter estimates. In order to investigate whether TE and INSHRS variables are significant in influencing school performance at the national level, we re-estimated equation (1) without TE, INSHRS and both TE and INSHRS. The

parameter estimates in Model 1 and Model 2 are remarkably stable. The overall canonical correlations also remain stable. On the other hand, dropping the INSHRS variable did reduce the redundancy index slightly and change the parameter estimates. Hence, adding TE to the national education production function does not give additional explanatory power and can be ignored. On the other hand, INSHRS should not be dropped although it has the minor importance on determining school performance.

Table 2. Canonical fit estimates of the Cobb-Douglas production function

Variables	Model 1	Model 2	Model 3	Model 4
School Outputs				
MATH	0.825	0.817	0.916	0.897
SCIENCE	0.186	0.194	0.089	0.110
School Inputs				
PPNTE	-0.389	-0.390	-0.368	-0.371
PTR	-0.215	-0.215	-0.206	-0.205
TE	0.008	Omitted	0.022	Omitted
INSHRS	0.098	0.099	Omitted	Omitted
Environmental Inputs				
HER	0.491	0.493	0.485	0.605
OST	0.215	0.217	0.195	0.286
Gender Influence				
FEMALE	0.117	0.116	0.124	0.220
N	131	131	131	131
Rao's F	10.025	11.206	11.016	12.731
Wilk's Lambda	0.403	0.418	0.423	0.437
Bartlett's Chi-square	113.60	109.458	107.951	104.407
P value	0.000	0.000	0.000	0.000
R _d (%)	51.30	51.40	50.08	50.16

In short, Model 2 is chosen for further analysis. Based on the absolute value of parameter in Table 2, the two educational inputs with highest contribution to the canonical variate are home educational resources and per pupil non-teaching expenditure. Not surprisingly, this reveals that the home educational resources' effect is a strong influence on academic performance, and this conclusion is in line with the Coleman Report and most previous studies.

Using the parameter estimates in Model 2, the marginal rate of output transformation showing the relationship among outputs and the marginal elasticity linking the input and output can be calculated, and these results are shown in Table 3.

Table 3. Canonical fit estimates of the Cobb-Douglas production function

Variables	Parameter estimates	ME (MATHS)	ME (SCIENCE)	MP (MATHS)	MP (SCIENCE)
School Outputs					
MATH	0.817				
SCIENCE	0.194				
School Inputs					
PPNTE	-0.390	-0.478	-2.012	-0.359	-1.508
PTR	-0.215	-0.264	-1.110	-0.691	-2.903
INSHRS	0.099	0.122	0.516	0.066	0.276
Environmental Inputs					
HER	0.493	0.603	2.538	0.402	1.688
OST	0.217	0.265	1.118	0.138	0.578
Gender Influence					
FEMALE	0.116	0.142	0.599	0.132	0.555

The marginal products of INSHRS, OST and FEMALE are quite small. On the other hand, a one per cent increase in the percentage of students with at least medium level of home educational resources index would lead to an increase of around 1.7 in science score and 0.4 increase in mathematics score. It is also found that larger pupil teacher ratio leads to a deterioration of

educational quality and output. Similarly, a RM1 increase of per pupil non-teaching expenditure will decrease the science score by 1.5 points and mathematics score by 0.4 points. This result indicates that non-teaching expenditure does not contribute directly to learning. In general, taking these educational inputs into consideration, the marginal effect on science achievement outperformed the mathematics achievement.

From the marginal products, marginal rates of substitution are calculated and presented in Table 4. In this analysis, it is unlikely that we can compensate for the number of female students, the parent's educational level or the home educational resources with other variables. However, an increase in time spent in instruction can compensate for low level of out-of-school study time index. The result in Table 4 indicates that the MRTS of INSHRS for OST (which equals $MP_{\text{INSHRS}}/MP_{\text{OST}}$) has a value of 2.096. This result indicates that schools with majority low level out-of-school study time can compensate for deficiencies in this environment factors with extra instructional hours of 2.1 per cent is necessary to offset a one per cent in percentage of students with at least medium level in out-of-school study time index (OST) and keep output constant.

Table 4. Marginal rates of substitution derived from the Cobb-Douglas production function estimates of Table 3

	PPNTE	PTR	INSHRS	HER	OST	FEMALE
PPNTE	1.000	1.926	-0.183	-1.120	-0.383	-0.368
PTR	0.519	1.000	-0.095	-0.581	-0.199	-0.191
INSHRS	-5.468	-10.530	1.000	6.122	2.096	2.012
HER	-0.893	-1.720	0.163	1.000	0.342	0.329
OST	-2.609	-5.024	0.477	2.921	1.000	0.960
FEMALE	-2.718	-5.233	0.497	3.043	1.042	1.000

CONCLUSIONS

This study uses data from national sources and TIMSS-R carried out in 1999, together with canonical regression to investigate the importance of the school and environmental inputs and gender influence in the production of mathematics and science education. These analyses demonstrate the significant effects of home educational resources on the Malaysian school's mathematics and science achievement. Furthermore, pupil teacher ratio appears to be the most productive input among the educational inputs considered. Last but not least, it finds that instructional hours can be used to offset the low level of out-of-school study time.

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Information and communication technology and education: Analysing the Nigerian national policy for information technology

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This paper presents an analysis of the Nigerian National Policy for Information Technology. The analysis reveals that the policy is inadequate to impact positively on the Nigerian education system, and that the philosophical frame of reference is market driven. The policy places little emphasis on the integration and infusion of ICT in the country's education system. Policy implications and suggestions are offered to ensure maximum use of ICT potentials in the Nigerian school system.

Information technology, education, Nigerian, national policy, technology integration

INTRODUCTION

Information and communication technology (ICT) is an indispensable part of the contemporary world. In fact, culture and society have to be adjusted to meet the challenges of the knowledge age. The pervasiveness of ICT has brought about rapid technological, social, political, and economic transformation, which has eventuated in a network society organised around ICT (Castells, 1996).

The field of education has not been unaffected by the penetrating influence of information and communication technology. Undoubtedly, ICT has impacted on the quality and quantity of teaching, learning, and research in traditional and distance education institutions. In concrete terms, ICT can enhance teaching and learning through its dynamic, interactive, and engaging content; and it can provide real opportunities for individualised instruction. Information and communication technology has the potential to accelerate, enrich, and deepen skills; motivate and engage students in learning; helps to relate school experiences to work practices; helps to create economic viability for tomorrow's workers; contributes to radical changes in school; strengthens teaching, and provides opportunities for connection between the school and the world (Davis and Tearle, 1999; Lemke and Coughlin, 1998). Information and communication technology can make the school more efficient and productive, thereby engendering a variety of tools to enhance and facilitate teachers' professional activities (Kirschner and Woperies, 2003).

In research, ICT provides opportunities for schools to communicate with one another through e-mail, mailing lists, chat rooms, and so on. It also provides quicker and easier access to more extensive and current information, and it can be used to do complex mathematical and statistical calculations. Furthermore, it provides researchers with a steady avenue for the dissemination of research reports and findings (Yusuf and Onasanya, 2004).

Based on a review of 28 major reports on technology integration in American Schools, Culp, Honey and Mandinach (2003) advanced three major reasons for ICT in education. They suggested that technology is usually (a) a tool for addressing challenges in teaching and learning, (b) a change agent, and (c) a central force in economic competitiveness. As a tool for addressing

challenges in teaching and learning, technology has capabilities for delivery, management, and support of effective teaching and learning. It is equally good for geographically dispersed audiences, and it also helps students to collect and make sense of complex data. It also supports diverse and process-oriented forms of writing and communication, and it broadens the scope and timeliness of information resources available in the classroom. As a change agent, it catalyses various other changes in the content, methods, and overall quality of teaching and learning, thereby ensuring constructivist inquiry-oriented classrooms. As a central force in economic competitiveness, it deals with economic and social shifts that have technology skills critical to future employment of today's students.

Looking at the role of education in the development of any society, the school will be indispensable in developing an ICT culture of any country. The school must provide effective leadership in ICT integration, through research, modelling of effective integration of ICT, and provision of opportunities for professional development of citizens of a country.

A NATIONAL POLICY FOR INFORMATION TECHNOLOGY

In order to husband the potentials of ICT, most nations of the world have evolved national information and communication technology policies, to serve as a framework for ICT integration in all facets of the society. African countries, and particularly Nigeria, are not exceptions to this practice.

The digital divide between advanced and developing countries, particularly in Africa, is well established. Like most African countries, Nigeria as a nation, came late and slowly in the use of ICT in all sectors of the nation's life. Although Africa has 12 per cent of the total world population, the continent has two per cent presence in ICT use (Jensen, 2002). In Africa, there is low access to basic ICT equipment, low internet connectivity, low participation in the development of ICT equipment, and even low involvement in software development. In fact, New York City has higher Internet connectivity than the whole of Africa (Ajayi, 2002; Hall, 1998).

The seeming backwardness of the African continent in ICT necessitated a continent-wide initiative, the African Information Society Initiative (AISII), which had its origin in the African Regional Symposium on Telematic for Development, held in Addis Ababa, in April, 1995. The symposium organised by the Economic Commission for Africa (ECA), the International Telecommunication Union (ITU), UNESCO, the International Development Research Centre (IDRO), and Bellanet International, urged the ECA Conference of Ministers to consider the importance for Africa of the global information revolution (Ajayi, 2002; ADF, 1999). Based on this recommendation, the ECA Conference of Ministers in May 1995 passed resolution 795 (XXXI) titled 'Building Africa's Information Highway', which called for work on national information and communication networks for planning and decision-making as part of an African information highway, and for the establishment of a high level working group made up of African experts in ICT, to prepare Africa's entry into the information society. Subsequently, in May 1996, the ECA Conference of Ministers through its resolution 812 (XXXI) approved the plan of action prepared by the high-level working group entitled the African Information Society Initiative "An action framework to build Africa's Information and Communication infrastructure" (Ajayi, 2002; ADF, 1999).

The AISII action plan framework called for the formation of National Information and Communication Infrastructure (NICI) plans and strategies. This was to be an on-going process through planning, implementation, and regular evaluation of programs and pilot projects, developed according to the needs and priorities of each country (ADF, 1999). It should be stressed that Nigeria did not achieve much on the NICI plan and strategies at the beginning of 1999.

A significant leap was made when the Nigerian government in October of 1999 issued a document on telecommunications development strategy and investment opportunities in Nigeria. Similarly, in October 1999, the National Policy on Telecommunication was approved (Ajayi, 2002). The document contained policy statements on objectives, structure, competition policy, satellite communication, management structure, finance and funding, manpower development and training, internet, research and development, safety and security, international perspectives, and policy implementation and review (Federal Republic of Nigeria, 2000).

The national policy on telecommunication was a key step in the development of infrastructural base for ICT. In 2001, the Federal Government approved the Nigerian National Policy for Information Technology (IT), and followed this up with the establishment of the National Information Technology Development Agency (NITDA), which was charged with the implementation of the policy (Ajayi, 2002).

A NATIONAL POLICY FOR INFORMATION TECHNOLOGY AND EDUCATION

Information and communication technology (ICT) policy, as noted by Rowland (1996) and cited in Hafkin (2002), can be categorised into vertical, infrastructural, and horizontal policies. Vertical ICT policy addresses sectoral needs, such as education, health and tourism. The infrastructural aspect deals with the development of national infrastructure and this is closely linked with telecommunication. The horizontal aspect deals with the impact on broader aspects of society such as freedom of information, tariff and pricing, privacy and security. These three aspects are adequately addressed in the Nigerian IT policy. It is now important to examine the document as it affects education. In making this analysis, the writer has been guided by four key questions.

- What does the Nigerian national policy for information technology tell us about education?
- How adequate is the policy for the integration of ICT in the Nigerian education system?
- What implications are there for the Nigerian education system?
- What agenda is needed to redefine the national policy to cater for the country's education system?

Answers to these questions are intended to provide a basis for redefining and re-development of the Nigerian national policy on information technology (Federal Republic of Nigeria, 2001). First, the document mission statement recognised the need 'To Use IT for Education' (p. iii). In addition, the general objectives in three (xv, xvi and xxiv) of the 31 stated objectives stressed that information technology must be used to:

- xv) empower the youth with IT skills and prepare them for global competitiveness.
- xvi) integrate IT into the mainstream of education and training.
- xxiv) establish new multifaceted IT institutions as centres of excellence to ensure Nigeria's competitiveness in international markets (pp. iv – v).

In order to achieve these objectives, 20 strategies were outlined. The fifth strategy was stated in this way: "Restructuring the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund to education at all levels" (p. vi).

It should be underscored that although as the mission, general objectives, and strategies recognised the importance of ICT in education, the document has no sectoral (vertical) application to education. Issues relating to education are subsumed under sectoral application for human resources development. Under this sectoral application objectives 1 to 4 relate to education as follows:

- to develop a pool of IT engineers, scientists, technicians, and software developers;

- to increase the availability of trained personnel;
- to provide attractive career opportunities; and
- to develop requisite skills in various aspects of IT.

In order to achieve the objectives for human resources development, nine major strategies are outlined. These strategies are targeted at the building of knowledge and skills in information technology. These include (a) making the use of ICT mandatory at all levels of educational institutions; (b) development of ICT curricular for primary, secondary, and tertiary institutions; (c) use of ICT in distance education; (d) ICT companies investment in education; (e) study grant and scholarship on ICT; (f) training the trainer scheme for National Youth Service Corp members (g) ICT capacity development at zonal, state, and local levels; (h) growth of private and public sector dedicated ICT primary, secondary, and tertiary educational institutions; and (i) working with international and domestic initiatives for transfer of ICT knowledge. In spite of these objectives and strategies that are focused on education, the document is inadequate to cater for the needs of the country's education system. Some of the deficiencies noted in the document are enumerated as follows.

First, the policy has no specific special application to education. While there are sectoral applications for health, agriculture, art, culture, tourism; and governance, education is subsumed under human resource development. An ADF (1999) recommendation explicitly notes the need for sectoral allocation dedicated just to education.

Second, the objectives and strategies related to education as reflected in the sectoral application for human resource development are market driven. Students are only being prepared to acquire knowledge and skills for future jobs. The focus is only on learning about ICT, which is regarded as 'Topicality', whereas for primary and secondary schools the focus is regarded as the early stage of ICT use in education (Cloke and Sharif, 2001). This philosophy limits the potential of ICT in education to a central force in economic competitiveness. Its potentials as a tool for addressing challenges in teaching and learning and as change agent are thus neglected (Culp, Honey and Mandinach, 2003). Students need not learn about computers only; ICT should be integrated for the development and management of teaching and learning in Nigerian schools.

Third, teachers are indispensable for successful learning about ICT, and learning and teaching through ICT. Computer education introduced into the Nigerian secondary school since 1988 has largely been unsuccessful as a result of teachers' incompetence (Yusuf, 1998). Empirical studies have established that teachers' ability and willingness to use ICT and integrate it into their teaching is largely dependent on the professional development they receive (Davis, 2003; Pearson, 2003; Selinger and Austin, 2003; Watson, 2001). The Nigerian national IT policy is silent on teacher education and teachers' ICT professional development as envisaged by the review of Culp, et al. (2003).

Learning through ICT entails the development of nationally relevant context software for school use. The national policy does not recognise the need to create quality software. A review of 28 key policy documents over 20 years in the United States (Culp, et al., 2003) puts forward seven key recommendations. The second emphasises the creation of more high quality content and software. The available software in Nigerian schools is imported with no local content. The policy document does not address this issue.

A further recommendation by Culp, et al. (2003) also includes an increase in research, evaluation, and assessment. None of the issues relevant to ICT application in the Nigerian education system address the issue of research, evaluation, and assessment, all of which are critical to ensure success. Research, evaluation, and assessment should address access, professional development, use and competence, attitude, and so on.

In addition, the document has no specific direction on ICT or technology plan at institutional levels. Advanced countries have specific plans for ICT. For instance, in Britain the National Grid for learning initiatives, and the strategy for Education Technology, specifically addressed ICT issues in United Kingdom and Northern Ireland respectively (Selinger and Austin, 2003). The Nigerian national policy does not give any guidelines on school technology plans.

The implications of these inadequacies are that the national policy cannot adequately take care of the need of the Nigerian education system. Its educational focus is limited to the market driven goal. The need for integration in teaching and learning, the need for quality professional development programs for pre-service and serving teachers, research, evaluation and development, and the development of local context software are not addressed. These are major components of quality ICT application in education.

In view of these inadequacies, there is a need to revise the Nigerian national policy for information technology. Such revisions should be undertaken to involve stakeholders in the area of education so that they can ensure that the policy covers issues related to learning about ICT and learning through ICT. Furthermore, the objectives in sectoral application areas should address education specifically in order to broaden the market driven objectives. The integration of ICT into every aspect of teaching and learning should also be the key focus.

Although the issue of infrastructure is implicit in the present policy, it should be reviewed in such a way that access policy is addressed in concrete terms, since this is important in ICT integration. Infrastructural needs must be addressed across zones and school levels.

Since teachers are vitally important to ICT integration in education, the national policy on IT should address the issue of teachers' professional development. This should incorporate issues relating to teacher training institutions and ICT, pre-service teacher education, in-service teacher education, and standards for teacher competence and certification in ICT.

Since research, evaluation, and assessment are critical for ICT usage in education, the national policy should identify a frame of reference in order to gauge success of ICT application in education. Such a frame of reference will encourage refinement of school practices relating to ICT integration.

CONCLUSIONS

Despite the fact that Nigeria came late into the ICT world, the adoption of the Nigerian national policy for information technology in 2001 is the right step in ICT application in every sector of the nation's life. The document is designed to ensure that Nigeria as a nation recognises the strategic importance of ICT for national development. Successful application in every sector can only be assured through adequate coverage of needed areas. Identified gaps should be filled through the involvement of important stakeholders in education.

Information and communication technology is a powerful tool for the development of quality teaching and learning; it is a catalyst for radical change in existing school practices and a veritable vehicle for preparing the students for the future. Success in the implementation of an ICT policy will be dependent on the recognition of the importance of sectoral application to education and sustainable implementation. Maximising ICT potentials will involve quality ICT policy, greater involvement of private and public in the funding of the implementation, and proper implementation and monitoring.

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The impact of state funded higher education on neighbourhood and community in the United Arab Emirates

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This paper focuses on the provision of higher education in the United Arab Emirates (UAE) and the issues surrounding strategies employed by institutions to prepare tertiary level students for careers in the global economy. Dramatic growth and development in the Arabian Gulf region over the past two decades has made fundamental changes in the education system necessary. There has been a shift in focus from more traditional education and delivery methods, to contemporary approaches to support student learning with the emphasis on preparing students for careers in the knowledge economy. These changes in higher education, and its widespread provision, have impacted on the UAE and its economy in particular. This paper reviews the provision of higher education, its role in the rapidly developing society and economy of the UAE, and how the community is contributing to and benefiting from emerging partnerships.

Higher education, strategic planning, neighbourhood effect, life long learning, information age, United Arab Emirates

INTRODUCTION

The Arabian Gulf states¹ have witnessed dramatic population growth since the early 1990s. Coffman (2003) reports an annual growth rate of three per cent, and that approximately 60 per cent of the population in the region is under sixteen years of age. The implications for education are enormous and issues such as funding, infrastructure, staffing, curriculum, and keeping pace with the needs of the increasingly global workforce in the knowledge economy are significant. Literature relevant to these issues is scant in relation to the Arabian Gulf region. However, Aungles, Karmel and Wu (2000) identify the likely long-term implications for education of major demographic change in Australia which serves as a valid wake-up call for governments and educators worldwide. As populations around the world age and live longer, governments' social expenditure worldwide will be put under increasing pressure. Longevity in the United Arab Emirates (UAE) has improved significantly in the past 30 years due to dramatically enhanced living conditions, as has the child mortality rate, and the birth rate continues to increase encouraged by the government and its nation building policies².

The provision and funding of quality education is a concern in developed and developing countries as governments and other authorities search for a panacea. Reviewing the literature on

¹ The Arabian Gulf States comprise Saudi Arabia, Kuwait, Bahrain, Qatar, Oman and the United Arab Emirates (also known as the Gulf Cooperation Council or GCC).

² As at 2000, birthrate = 18 births/1,000 population; death rate = 3.68 deaths/1,000 population; infant mortality rate = 17.17 deaths/1,000 live births and fertility rate = 3.29 children born per woman. (Source: <http://encyclopedia.thefreedictionary.com>)

the marketisation (Friedman, 1962; Brown and Lauder, 1996; Marginson, 1996 and Ladd and Fiske, 2003) and privatisation of education (Caldwell, 2003a; Fitz and Beers, 2002; Mintzberg, 1996), it appears that no single strategy, solution or formula provides consistent, good quality education on a global basis (Cuban, at al., 2001; OECD, 2001). Aungles at al. (2000) predict an even greater shift in demographics over the next 25 years with a significant increase in older age groups at the expense of younger demographic groups, and this would appear to be a worldwide trend, although perhaps less so in the UAE where the birth rate may continue to increase. They point out that governments are likely to focus on providing for the elderly rather than on educational expenditure. Logically, those who have paid taxes should be entitled to a high standard of healthcare and a state pension upon retirement. However, government investment in education and the development of the future workforce, and therefore the economic prosperity of their countries must also be a high priority. Striking an appropriate balance and allocating social expenditure according to a realistic, well-planned and sustainable vision would appear to be sound government policy.

The worldwide demographic trends and related issues are particularly complex in the UAE where there is no income tax, although there is the clear expectation that the government will provide education, healthcare, pensions, and continue to develop the infrastructure of the country in line with the increasing needs of the community. In the emirate of Abu Dhabi, these social services are funded by oil revenues and other government investment, but in less wealthy areas of the country, resources are under great pressure. The first signs of strain have started to show in the field of education, due to the immense increase in the number of school and college-aged Emiratis.

Perceived threats to successful growth and development of the country may also relate to the very high expectations that citizens of the UAE have of their government. Generally, citizens of the UAE have the expectation that their children will receive state-funded basic and higher education that will eventually lead to gainful employment and a high level of remuneration. Access to education at all levels is seen as a right rather than a privilege (Bahgat, 1999), and open enrolment has previously ensured a place at either a government funded college or university upon graduation from high school (Sharè, 1999). The socio-economic status of a family is not an issue; in fact, there are few and incomplete records relating to family income in the UAE. In the early years of the building of this nation, and with an Emirati population of less than one million during the 1980s and 1990s, the above expectations were reasonable. Previously, young men would be provided with employment opportunities upon leaving school courtesy of a friend of the family, or perhaps even join the family business. Those better placed in society received the more lucrative government and oil company positions, thus perpetuating the cycle. It would seem that in recent years this practice has begun to diminish and more onus appears to be placed upon competence and qualifications, although to a limited extent.

The focus in this paper is based on three major issues relating to higher education in the UAE. First, the provision of higher education is reviewed, examining available options and educational strategies employed to meet the needs of the community and workforce. Next, the role of the business community in the transformation of higher education programs is considered. Finally, the importance of life-long learning in the information age is examined in the context of further developing the human capital of the UAE.

PROVIDING HIGH QUALITY EDUCATION IN THE UAE

Global trends in education indicate that a serious review and reform of the *status quo* in education is needed (Caldwell, 2003a). A good standard of basic education is the first step towards building a strong workforce in any country (Cuban, 2001) and there is a major role for the government and community in aspiring to a positive neighbourhood effect in an effort to provide and maintain a high quality learning environment, and ultimately strengthen the community (Friedman, 1962).

Friedman (1962) writes about the 'neighbourhood effect' with education benefiting the individual, the family, the community and eventually the economy and the country as a whole. Education plays a significant role in building and sustaining a country (Brown and Lauder, 1996), and educational leadership should therefore be seen as a key component in that process. Bahgat (1999) provides an overview of the transformation from traditional to modern education in the Arabian Gulf region and comments on how the parameters have previously been unlike those in many other parts of the world, although worldwide trends are increasingly becoming relevant to the Gulf context with the widespread implementation of technology in the information age.

In the UAE, strategic leadership of education is particularly essential as socio-economic and political transformation has been significant and dramatic during the past 20 years. Bahgat (1999) asserts that a strategic, well-articulated focus would appear to have been overlooked in the expansion and transformation of education in Arabian Gulf region since changes have been so rapid. Caldwell and Spinks (1992, pp. 92) discuss leadership strategies and provide five statements, which although designed to be applied to institutions in the Asia-Pacific region, would appear to be equally of value in the UAE at primary, middle, secondary or tertiary level. They claim that educational leadership is strategic when it involves (a) remaining abreast of trends, issues, threats and opportunities; (b) sharing knowledge in the community; (c) establishing structures and processes; (d) ensuring the community is focused on the strategies; and (e) monitoring and reviewing of the implementation of these strategies (Caldwell and Spinks, 1992, p. 92).

Established in 1971, the UAE is a young country. The economy of Abu Dhabi emirate is based on the oil industry but more diversity has recently been introduced in the shape of banking and finance, light industry and tourism. Neither citizens nor expatriates pay income tax to the government and the infrastructure and development of the country is funded directly by the government. State-funded basic and higher education, including textbooks, is free to citizens of both genders. Private basic education in the UAE³ is often followed by higher education overseas or at one of the recently established private universities in the UAE. However, increasingly within the past five years, overseas universities have begun to open branches in the UAE or develop affiliations with existing private colleges⁴. To some extent, this may be in response to the events of the attacks on the United States on September 11, 2001, since when Emiratis, among others, appear to have experienced a greater degree of difficulty in obtaining visas to study in the West, particularly the United States. Higher education credentials from the United States and other Western countries continue to be highly desirable and any political differences would appear to be overlooked where the continued economic development of the country is concerned.

Wealthier Emirati families tend to make the same choices as those in other countries, although perhaps for different reasons, and frequently send their children to private schools. There is significant prestige attached to being in a position to send children to a private school where they become proficient in English and mix with students of other nationalities, especially since parents, and certainly their grandparents are unlikely to have attended school at all in the accepted Western sense. The international credentials earned at private schools carry great kudos in the community and are an indication of a positive future career.

³ Expatriate children are expected to attend private schools, usually community schools such as Al Khubairat British School (<http://www.britishschool.sch.ae>) and the American Community School of Abu Dhabi (<http://www.acs.sch.ae>). Such schooling is available to expatriate and Emirati students who qualify academically and whose parents can afford the fees.

⁴ Typically, higher education for the children of expatriates is provided in their home countries.

Higher Education Choices in the UAE

When discussing higher education in the UAE, it is important to consider the contextual background. The sector has grown dramatically over the past 25 years and now offers two government universities: UAE University in Al Ain, which was founded in 1977, and Zayed University, based in Dubai and Abu Dhabi, founded in 1998; and 12 federal Higher Colleges of Technology (HCT) campuses located in six emirates. There are an additional 23 non-government, higher education and training institutions currently licensed by the Ministry of Higher Education and Scientific Research, 11 of which have been accredited by the ministry thus assuring their quality (Tanmia, 2004).

As this paper reviews the provision of higher education and the strategies being implemented in the UAE to manage changes in the educational environment, it provides examples to illustrate what is currently being done to address pertinent educational issues from the perspective of the Higher Colleges of Technology (HCT), specifically Abu Dhabi Men's College (ADMC) and its immediate community.

In the past ten years the higher education sector has grown four-fold, with the confirmed enrolment figure of 37,548 for the academic year 2001-02, 70 per cent of which are women. The uptake of higher education has also increased dramatically with 95 per cent of all female secondary school leavers and 73 per cent of all male secondary school leavers embarking upon college courses of study. HCT graduate numbers were modest until 1998 when the graduating class was 1,437. This trend has continued in recent years⁵ due to infrastructural improvements in the system, with new campuses being opened in the more rural emirates in order to reach a wider catchment area.

Government run and funded higher educational institutions in the UAE are segregated, although private institutions are frequently co-educational. It is also noteworthy that the combined number of college graduates produced each year is comparable with that of some individual institutions in larger, more developed countries. Table 1 illustrates the breakdown between private and government institutions, by gender, for the academic year 2001-2002 which saw a total of 7,117 students graduate from college in the entire country (Tanmia, 2004). Based on the number of students currently in secondary school, the expected increase in the uptake and eventual graduation from higher educational institutions for the first five years of the current century is approximately 37 per cent overall (NAPO, 2002).

Table 1. Number of UAE national graduates from accredited federal and private higher educational institutions, by gender, 2001/2002

Institution	Male	Female	Total
Private Higher Education Institutions	262	624	886
Zayed University (2 campuses)	0	379	379
Higher Colleges of Technology (11 campuses)	1237	2084	3321
UAE University	438	2093	2531
Total	1937	5180	7117
Percentage	27	73	100

Source: CLMRI (Tanmia), 2004 – from various sources

⁵ Recent numbers of graduates from the HCT: 2001 – 2,536; 2002 – 3,321; 2003 – 3,922. Projected growth in number of HCT graduates for 2004 is 4,635 and 2005 is 5,299 (HCT, 2001)

The Position of Private Higher Education in the UAE

The UAE was the first country in the Gulf Cooperation Council (GCC) to authorise private higher education (Coffman, 2003). Private institutions, mostly from the United States and primarily based in Dubai and Sharjah in the UAE, are not seen as a threat by the government, but rather as a positive solution to managing the increased numbers of students in need of higher education. This increase could not have been accommodated had it not been for the on-going growth and development of the international private universities (Robertson, 2000). Private institutions are also viewed in the community as healthy competition (Cerny, 1995; Wade 1996), and as being in tune with the needs of the private sector and international workforce standards (Coffman, 2003). Perhaps more importantly for the students who graduate from these private institutions, they will earn a credential from an international university to help smooth their career path, although it is currently highly unusual for Emiratis to seek employment overseas. Dore (1997), Livingstone (1998), and Lowe (2000) have explored the topic of international credentials further and addressed issues relating to credentialism in a global context.

Post-graduate Options in the UAE

Post-graduate studies in the UAE are offered at government and private institutions, such as, UAE University, Zayed University, University of Sharjah, the American University of Sharjah, Dubai University College, and the University of Wollongong, all of which offer Master of Business Administration (MBA) programs. However, with the launch of Universitas 21 Global (www.u21global.com/mideast), which offers online MBA programs from 16 different accredited universities worldwide, it would appear that business programs are abundant compared to the opportunities in other majors.

Opportunities for post-graduate studies in the sciences include those offered at UAE University, which runs three post-graduate programs: Master of Science in Environmental Sciences; Master of Materials Science and Engineering, and Master of Science in Water Resources. These programs are offered free of charge to eligible candidates since the university is government run and funded. An example of post-graduate alternatives in the private sector would be the American University of Sharjah which runs Master's programs in Mechatronics and Urban Planning. Further program options for study at the post-graduate level are being prepared and developed at Ajman University of Science and Technology and Etisalat Engineering College. In the longer term, the proposal is that doctoral studies will become available both in the government and private sectors.

RAPID GROWTH, EDUCATIONAL NEEDS AND THE JOB MARKET

At the start of 2004, the total population of the UAE, including expatriates, reached approximately four million (UAE-The official website, 2004), with Emiratis comprising nine per cent of the total UAE workforce, while two per cent of them were unemployed, according to the three-part *Employment and Human Resource Report 2004*, released by the National Human Resource Development and Employment Authority (Tanmia, 2004). The report focuses on strategies for increasing the employment amongst UAE nationals, particularly in the private sector, career development, improving work skills, and highlights the need to reform higher education. These goals are echoed and supported by Al-Suwaidi (1999) who asserts that it is imperative that the UAE pursues more aggressive and diverse human resource development policies.

The Tanmia (2004) report stresses the need for a curriculum that is oriented to the job market. This supports the argument raised by Coffman (2003) in favour of international private higher education which better suits the needs of private sector employers. A similar argument is addressed by Bahgat (1999) and Al-Sulayti (1999) who highlight the mismatch between the needs of the labour force and the educational system in the Arabian Gulf region. A total of 13,361 UAE

nationals are expected to enter the job market in 2004 according to Tanmia (2004), and the projected figures for 2006 and 2010 are 16,187 and 19,610 respectively. Since 57 per cent of the UAE population is currently below the age of 20, those charged with leadership roles in education are examining ways of addressing the needs of this rapidly growing nation for the twenty-first century.

The UAE state higher education budget has been frozen for five years⁶ in spite of a significant increase in population, and this is especially alarming in light of the demographic data relating to increases in high school and college-aged students. Add to this the focus of the government on emiratisation and the development of a workforce for the knowledge society of the twenty-first century, and it becomes clear that parents as well as educators must review their traditional strategies and approaches to providing quality teaching and learning. The situation in the UAE is that the underfunding of higher education has had an impact on a previously liberal admissions policy (Sharè, 1999). Such a situation can be equated to the gradual and surreptitious global trend of the withdrawal of support and government funding of schools worldwide. Many schools worldwide are in a poor state of repair, teachers are dissatisfied with their salaries and working conditions, and a perception that state schools are falling short of their responsibilities being nurtured by governments. Such a strategy may be in an effort to abdicate responsibility for a vital, expensive and politically sensitive service which affects a country's entire population and is an easy target in political campaigns. The effects of this reduced level of government support are already being felt in the labour market according to Tanmia (2004) who highlight a number of disturbing facts that need to be addressed by the community as a whole and educators in particular to ensure continued economic success and growth in the UAE.

Al-Rostamani (2004) reports that of those registered with Tanmia as unemployed:

- 76.6 per cent are females;
- 50.8 per cent have completed their higher education;
- 70 per cent are aged between 20-29 years;
- Higher Colleges of Technology graduates in health sciences (1996-2001) say 40.8 per cent of them are unemployed;
- the number of UAE University graduates who registered with Tanmia did so in the unemployed and not the job-seekers category;
- males were able to find jobs more easily than their female counterparts; although both had the same educational qualifications; and
- Tanmia were able to place only 12.6 percent of 6,563 job-seekers in 2003

A possible further ramification of the freezing of funding in higher education may also be a subtle move by the government to increase the pace of emiratisation. Emiratis lacking higher education would be forced into the situation where they would have to accept blue collar or low-level clerical positions, currently held by workers from the sub-continent who would subsequently be returned to their homelands. The workforces of Oman and Bahrain, for example, comprise citizens employed at all levels, unlike the UAE where citizens currently expect to be employed at management level.

EDUCATIONAL REFORM IN THE UAE

The significance of the role that schools play in preparing students for higher education, and ultimately for their future careers, should not be underestimated. In the UAE the school system is

⁶ Funds are occasionally forthcoming from other sources such as sheikhs and other benefactors in the community, partnerships in industry and events such as conferences.

currently under scrutiny by external contractors with a view to long-term educational reform (Za'za, 2004). However, the quest for an ideal solution continues worldwide and the OECD (2001) puts forward the view that there may be a number of possible solutions, rather than one simple answer, to the future of schools. It is vital that educational reform should be viewed holistically, rather than simply extracting methods and curricula which work elsewhere and attempting to transplant them into a different country with a different culture and values set. Addressing educational issues in isolation and with a fragmented approach, rather than holistically, is rarely successful in the longer term. Unfortunately, this method is frequently employed in the UAE where Western culture is highly valued, though not always popular. The latest ideas and technology are often embraced without planning or critique, and may subsequently be abandoned just as quickly and easily in favour of the next new fad or trend. The importance of strategic planning and the long-term, objective monitoring and evaluation of educational processes and technology introduced into institutions needs to be highlighted to educational leaders in the region. Caldwell argues that "transformation means change that is significant, systematic and sustained" (Caldwell, 2003a).

Wider, broader educational experiences can benefit students greatly, but the challenge is to manage the changes and the funding without losing sight of the focus, namely, the provision of a solid, meaningful, educational experience with transferable skills and a clear appreciation of the need for lifelong learning (Al-Suwaidi, 1999; Carnevale, 1991; Livingstone, 1997). Global trends in education indicate that a serious review and reform of the *status quo* in education is needed worldwide (Caldwell, 2003a), and focusing on the UAE, Davies (1999) highlights the fact that greater investment in teacher training, curriculum development and technology is required to reform schools and higher education and training.

THE BUSINESS COMMUNITY'S ROLE IN TRANSFORMING HIGHER EDUCATION

Although there are certain issues that clearly distinguish the UAE from many other countries, it is important to acknowledge that in spite of the differences between, for example, the United States and the UAE in the composition and background of cohorts, the argument against standardised reform that Cuban at al. (2001) present, and which is also illustrated by the OECD (2001), would seem to be transferable and particularly valid in the UAE. Each of the emirates, of which there are seven, united in 1971 as a federation, has a separate and distinctive profile as far as terrain, raw materials, trade and indeed tribal origins is concerned. Only one emirate, Abu Dhabi, has its economy based in the oil industry. Dubai is essentially the commercial centre with its economy traditionally being based in merchant trading, and Sharjah is considered to be the cultural centre of the country, but is also involved in trading and the fishing industry. The smaller emirates of Ras Al Khaimah, Um Al Quwain, Fujairah and Ajman are much less well-developed, both economically and in terms of infrastructure, and have developed much more slowly as a result. Education, the economy and the workforce are markedly different in the smaller emirates than in the larger, more economically robust centres. It stands to reason then that the distinctive educational issues, needs, and the requirements of the workforce in the various regions must be addressed rather than enforcing a single, across the board policy for state-funded basic education and higher education.

Sharing knowledge in the community at large and the development of human capital in the UAE (Mograby, 1999) is thought to be vitally important to the mission of the HCT and the eventual success of its graduates in the workforce. The importance of addressing a possible mismatch between the education provided and the current and ever-changing needs of the workforce is underscored by Bahgat (1999), Benjamin (1999), and Odeh (1993). In order to address the needs of the local workforce in the UAE, Program Advisory Committees (PACs) were set up when the HCT was launched in 1988. Each division in each city established contact with the business

community and invited their input, both positive and negative. These committees meet two or three times a year, more frequently in the earlier years, to discuss changes in the market needs, to inform and to advise colleges on constructive and useful alterations in each of the programs of study.

The business community is a vital link in the UAE where a large proportion of educators are from overseas and often need guidance regarding local conditions and practices. The system of meeting and consulting the PACs works well and builds relationships within the business community which pave the way for HCT students to participate in work placement and possibly eventual employment with the companies that are actively involved⁷.

Addressing the Needs of the Community

The knowledge society is shaping all our lives and it pervades every avenue of our lives (Drucker, 1993). Caldwell (2003a) points out that there is “universal recognition that education is the key to the well being of society and of the individual in the years ahead”. Citizens should now be prepared more than ever, and from a very early age, to participate in a meaningful way in society and to be able to integrate their skills in a variety of ways (Davies, 1999). As Drucker predicted in 1994, there are currently very few jobs in any sector that do not demand computer literacy as a basic skill. It is clear that schooling, and indeed higher education, needs to adapt to the demands of the workplace in a very dynamic sense (Sharè, 1999). Education needs to transform, and educational institutions of the future may take many forms with educators having to adapt to their new roles (Caldwell, 2003c). The OECD (2001) suggests six possible scenarios for future schooling⁸. However, the one thread that seems to run through these scenarios is the need for greater, and possibly wiser, expenditure on and investment in education.

One significant development that has occurred at the HCT in response to both rapid growth and the need to gauge the success, or otherwise, of college programs, their graduates, and feedback from employers, is the Program Quality Assurance (PQA) process, in which academic programs are monitored and reviewed for an entire academic year, every three to five years. Accountability, best practices, outcomes and results are examined, and managers are given an opportunity to defend their written reports in front of a review panel. The resulting reports and evidence are stored in an on-line portal and those authorised to do so may access the data and regularly update it to maintain its currency. The data provides vital information that may be used to address issues relating to the question of the current high level of unemployment in the UAE, and the further development of strategies to ensure that program offerings are in line with the needs of the workforce.

As a strategic measure responding to PQA feedback, and to ensure continued quality even after graduating from the HCT with a Diploma, Higher Diploma or a Bachelor’s degree, it became apparent that a facility would be needed to allow members of the workforce to update and build on their skills. Therefore, in addition to the recognised HCT programs of study that lead to formal credentials, a branch of the organisation was formed to cater to the specific and urgent needs in the workforce and community. The Centre of Excellence for Applied Research in Training (CERT) was established in 1996 in Abu Dhabi, affiliated to Abu Dhabi Men’s College (ADMC)

⁷ The HCT is also supported by the business community in other ways such as companies and government departments who sponsor large numbers of students in programs such as Highway Maintenance, Chemical Engineering and Aviation.

⁸ Scenario 1: “Robust bureaucratic school systems”. Scenario 2: “Extending the market model”. Scenario 3: “Schools as core social centres”. Scenario 4: “Schools as focused learning organizations. Scenario 6: “Teacher exodus – the ‘meltdown’ scenario”. (OECD, 2001).

to develop and support partnerships with industry, and to provide fee-for-service programs to complement those offered through the HCT. International companies, such as Honeywell and Lucent, have operational branches at CERT and partnerships have flourished over a relatively short period of time.

The educational courses offered at CERT relate to very specific needs in the community and may be tailor-made to suit companies and organisations in Abu Dhabi and Dubai. Courses may also be intensive and therefore completed in a comparatively short space of time so that those participating may quickly return to work with the requisite new skills, thus contributing very effectively to the economy and growth of the country. CERT fills a niche in the UAE market, which in most instances lacks established training departments within private companies and government departments. This is in part due to the rapid development of the country and the lack of a strategic plan in almost all sectors (Bahgat, 1999). Participants employed by the client company may have previously attended ADMC as students, or they may even be non-nationals. State-funded HCT programs are only available to UAE nationals. However, CERT courses are funded by employers and may be attended by those the employer chooses to allocate as candidates. By extending the remit of the HCT, CERT has helped to strengthen the funding of the college system while also establishing new HCT Diploma programs in Mapping and Surveying, Food Inspection Technology, Safety Inspection Engineering, and a Higher Diploma in Military Nursing. These credentials were developed and established in response to urgent needs in the workforce, and would have taken significantly longer to reach consensus on and approve, as part of the widespread HCT college system, than through CERT.

Higher Education and the UAE Workforce

Brown and Lauder (2003) drew attention to the implications for education and labour market policy where college graduates cannot easily or readily be absorbed by the workforce. The issue of there being a limited number of suitable job vacancies for college graduates is a clear indication that tailor-made courses as requested and funded by employers, is a need that must be addressed. In a rapidly growing economy employers cannot wait patiently for new graduates to mature and develop, so they must be pro-active and prescriptive, and support practical training initiatives to complement their employees' more academic education.

In the UAE, 90 per cent of current college graduates have been educated in traditional government institutions, directed by government policy (Tanmia, 2004), and will need to update their skills in line with the labour market as it continues to develop and diversify. Continued development of the workforce, and currency in graduates' fields of expertise, is vital to the economy of the UAE. In his discussion on the development of an industrial middle class in Arab countries, Odeh (1993) makes a persuasive case for the further development of vocational education in the region and highlights cooperation between industry and educationalists as key to such development. CERT courses are under constant review and are updated, working in tandem with individual companies and organisations as clients.

LIFE-LONG LEARNING IN THE INFORMATION AGE

Initially, the HCT established fairly clear guidelines in the form of a mission statement that outlined the expectation and challenge that basically every graduate would be prepared to operate, in English, in the global economy, and participate in the continued development of the UAE. Caldwell (2003a, p.16) states, "All students in every setting should be literate and numerate and should acquire a capacity for life-long learning, leading to success and satisfaction as good citizens and productive workers in a knowledge economy". This statement is very close to the mission statement of the HCT, and would not be out of place in any educational institution (Luca et. al., 2001; McLoughlin, 2001). However, initiatives introduced to ensure that students are aware

of the need to become lifelong learners in an effort to achieve their personal goals and those of their country, are frequently less popular than one may expect.

It is a major challenge to deliver effectively the message to students that the knowledge they are accumulating in order to gain an academic credential may soon need to be updated. This task is exacerbated in the UAE where parents often lack formal education and may largely be unaware of the demands of the workplace, and therefore the need to remain current. The burden of convincing students of the need to adopt strategies for survival in the knowledge society remains with educators, careers counsellors and future employers. There is a considerable opportunity for schools and colleges in the UAE to develop further greater understanding in this area in an effort to ensure steady growth in the economy of the country, particularly for the next generation when oil may cease to support the economy to the extent that it currently does. Drucker (2000) maintains that keeping up with knowledge and viewing the world as a whole mattered less in the days of lifetime employment, but knowledge is mobile and transferable and does not belong to one's employer or the state but to oneself, and is highly marketable.

Brown and Lauder (1996), Aronowitz and De Fazio (1994), and Reich (1991) provide a detailed overview of how the major economies of the world, and the United States in particular, have changed historically, especially in the second half of the twentieth century. It is apparent that globalisation and economic transformation have long-term consequences, and that good quality education is vitally important for future economic growth and prosperity (Brown and Lauder, 1996). The importance of life-long learning in the knowledge society is emphasised by Aronowitz and De Fazio (1994), Brown and Lauder (1996), Grabinger (1996), and Reich (1991). Aronowitz and De Fazio (1994) also allude to the inflation of credentials and consequently the need to be constantly acquiring additional qualifications to remain marketable in the workforce. These issues should be considered as matters of strategic importance for educators who should currently have a mandate to prepare their students for a career, propelled and supported with a philosophy and acceptance that lifelong learning is a necessity (Halloran, 1999).

Al-Hussaini (2001) reports that "Globalisation, skills in information technology, the shift from teaching to learning, a lifelong learning culture and the need to involve private sector in higher education" were recurring themes during "The University of the 21st Century" conference in Oman, March 2001. It seems that educational issues are similar the world over, although focusing on the oil producing economies of the Arabian Gulf region Al-Hussaini (2001) emphasises that in 20 years from now, in a "post-oil economy, a highly educated and trained manpower will most probably be the only reliable economic resource" in the region. A nations' Intellectual Capital is seen as the driving force for future wealth and development (Edvinsson and Malone, 1997).

CONCLUSIONS

The UAE is managing to keep abreast of trends, issues, threats and opportunities in education and the job market, implementing innovative changes, for example laptop learning, and welcoming outside influences in the form of the latest technology and methods, and international private universities. The government has also benefited from the support and expertise of the international community and clearly appears to have recognised that progress would have been much slower working in isolation and without significant contribution from educators and business partners. The emergence of unemployment in the UAE has prompted the government rapidly to develop Tanmia with a certain amount of guidance from overseas experts to arrest the growing trend and the evident mismatch between the skills sets of prospective employees and the current job market (Bahgat, 1999; Odeh 1993).

The business community in the UAE has proved to be invaluable in the gradual transformation of teaching and learning, and the preparation of the workforce of the twenty-first century. They

provide continuous and supportive advice in the form of PACs at the HCT, and this is particularly vital to the IT-related programs which are under constant review. These PACs now include in their membership graduates of the HCT who recognise the importance of their role and wish to contribute to the learning of current students. Odeh (1993) describes a rather different scenario when discussing vocational education only a decade ago, which highlights the significant progress that has been made in the region.

Processes such as the PQA at the HCT are in place to monitor the quality of education in the UAE. However, quality assurance needs to be more widespread and should not be confined to higher education. With the introduction of PQA, or similar processes, to increase the level of accountability into government schools, there may be a significant improvement in the preparedness of high school graduates to enter higher education. This, in turn, would reflect very positively on the quality of college programs and their eventual graduates, and ultimately impact on the workforce and economy of the country.

Underpinning all the strategies and processes described in the literature reviewed is the evident need for educational systems, government-funded and private, to produce students with a clear understanding of the necessity for lifelong learning. This learning is by no means restricted to the classroom, and the community as a whole can, and should, provide and share valuable and timely information. The neighbourhood effect (Friedman, 1962) is reflected in the construction of meaningful education, engaging careers, a strong economy and the continued generation of knowledge, partnership and prosperity in the communities of the UAE. Change is constant in the knowledge society and affects the entire community.

In a relatively young country with a comparatively small population of four million, and a citizenship of approximately one million, the UAE appears to have accepted change more readily than in other more established and developed countries. Emiratis at all levels are keen to embrace the latest technology and practices from the West, although often at the expense of successful existing systems. However, it is widely accepted in the UAE that education needs to transform itself in line with the demands of the workplace and the knowledge economy. This is not a new strategy or demand for a country where basic education has only been mandatory for a generation, prior to which schools' main aim was to teach the Holy Qura'an.

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Basic trends in the development of professional higher education in Armenia¹

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The subject of this investigation is the composition and distribution of students of Armenian educational institutions and their partition in the state and private sectors of higher education. The study examines the general rise of educational institutions, particularly private ones, where the average number of students is considerably less than in the state institutions of higher learning. There has also been an increase in the number of students in state-paid and private higher education institutions. This is discussed, together with the fact that 75 per cent of students are involved in the system of paid education in the Republic of Armenia. For that reason, the financing of education is a serious problem for a considerable part of population at the present time. Gender issues that are involved in professional higher education are examined.

The structure of financing higher education and problems unique to the Republic are also considered. Some measures for the further development of a financing and lending system in higher education are suggested, particularly the creation of an educational lending system that would enable more people to study for degrees in the higher education sector with the assistance of student loans.

Armenia, professional education, financing, educational loans, structure of institutions, higher education

INTRODUCTION

The most important means of solving the global problems that humanity faces is through education. Education is central to the direction of development of any state, and the system of education is the sphere in which the intellectual potential of a nation develops. At the present time the most important product in the international market is human capital, and the level of education in society is a precondition for the successful development of the state.

It is especially important for Armenia, which, because it has severely limited natural and investment resources at its disposal, must choose education as a priority. In this case, the level of development in higher professional education is of primary and defining importance.

In Armenia, the preparation of professional staff is performed, in most cases, by state institutions of higher education, where the majority of students undertake their studies. The number of institutions of higher education has increased over the last ten years and has now reached 20. The state is the founder of these institutions. Non-state or private educational institutions also function in the Armenian Republic together with the state ones. They are directed by highly qualified staff. The number of such educational institutions is 73. In most cases, they are small institutions, with average student numbers that are about 10 times smaller than those of the state institutions and

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usually not greater than 300 on the average. The majority of the private institutions are concentrated in the capital of the Republic, Yerevan. Here there are 17 state and 50 private educational institutions in existence, which is understandable because almost one third of the population of the Republic is concentrated in Yerevan, as well as the fact that the wealth and the level of business activity are considerably higher there.

HIGHER EDUCATION IN ARMENIA

The following types of higher education institutions function in Armenia: universities, institutes, academies, and conservatories. They offer the following degrees and higher professional qualifications:

- Bachelor degrees,
- Certified specialist certificates and degrees, and
- Masters degrees.

At the present time, the total number of students in the Armenian educational institutions is approximately 78,000 persons, reflecting an increase in the last few years of nearly 38 per cent. However, the majority of the students prefer to study in state-run educational institutions. Only 28 per cent of the total number of students study in private institutions. Table 1 shows the number in thousands and the percentages of students in higher education institutions in Armenia from the years 1997 to 2004 (Statistical Review, 2004).

Table 1. Quantity and distribution of higher education students in Armenia

Study year	1997	1998	1999	2000	2001	2002	2003
Total number of students, in thousands	56.2	59.7	61.7	60.7	65.6	72.3	77.9
The number per 10,000 persons in the population	148.2	157.2	162.2	159.6	172.6	225.9	242.7
Number of students in state educational institutions, in thousands	36.0	38.5	39.8	43.6	47.4	54.1	55.9
Per cent of state university students in the total student population	64.1	65.5	65.6	71.8	72.3	74.8	71.8
Number of students in private educational institutions, in thousands	20.2	21.2	21.9	17.1	18.2	18.2	22.0
Per cent of private university students in the total student population	35.9	35.5	34.4	28.2	27.7	25.2	28.2

Figure 1 shows graphically the number of students per thousand students enrolled in state and private education institutions in Armenia from 1997 to 2004 (Statistical Review, 2004).

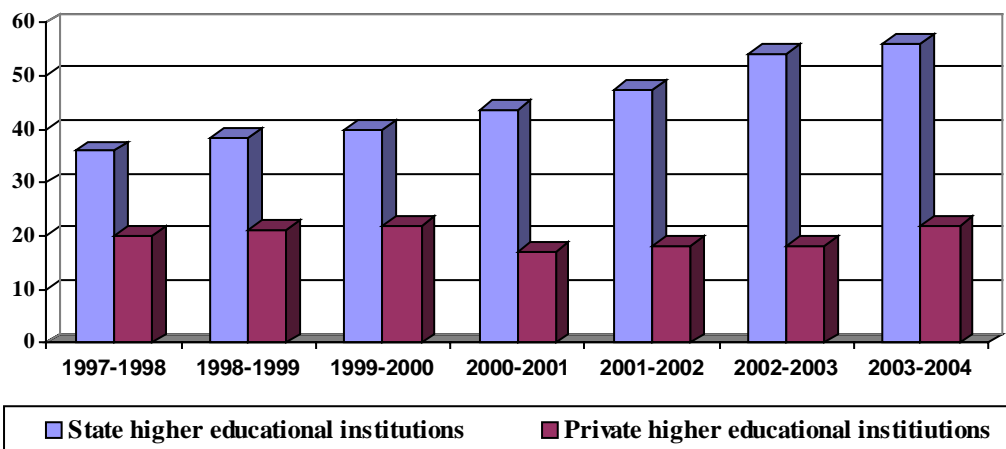


Figure 1. Number of students enrolled in state and private higher education in Armenia

The growth of number students in state education institutions for the period under study is greater than 50 per cent, reaching 56 per thousand or about 72 per cent of the total number of higher education students.

In recent years, active development of the private sector has been seen in the system of higher professional education, which is particularly important, taking into consideration the fact that this sector did not exist at all before 1990. Its existence is the result of economic processes that are connected to the development of a market economy and its effect on forces that influence the field of education. This, together with the fact that larger numbers of the population realise that higher education provides the greatest opportunity to obtain prestigious and highly paid employment and, accordingly, to attain a better position in society, has stimulated the growth of the demand for educational services that is characteristic in Armenia today.

Thus, the uniqueness of the whole system of higher professional education is that there is a large number of higher educational institutions, particularly private ones, compared with the rather small total numbers in the population of the Republic of about 3.2 million people (Statistical Review, 2004).

PREPARATION OF SPECIALISTS

The preparation of specialists in the Republic of Armenia is carried out along a number of professional lines. Thus, in the fields of manufacturing and agriculture, for example, in the material production sphere there has been a reduction in the number of students observed in the period under study. At the same time the education and preparation of economists and teachers have increased. The highest growth has been in the section that includes students of economics, which have reached 24 per cent in 2004. The greatest numbers of students in private higher educational institutions are in the fields of jurisprudence (about 30 per cent) and economics (about 22 per cent) of all students in those sectors. The private educational institutions are the closest to the marketing section of the professional education sphere, and thus they respond in a more flexible way to the requirements of the market and the financial demands of their students. Table 2 shows the percentage of students in various fields of higher education in Armenia (Statistical Review, 2004).

Table 2. Percentage of students in institutions of higher education in the Republic of Armenia according to professions

	Industry	Agriculture	Economy	Jurisprudence	Pedagogy	Health	Other	Total
2000-2001	15.9	3.5	19.1	2.9	13.2	9.4	36.0	100
2001-2002	12.3	2.8	19.9	11.0	16.7	8.3	29.0	100
2002-2003	8.0	2.3	23.0	10.0	16.4	7.6	32.7	100
2003-2004	8.1	3.3	24.3	3.5	16.5	7.8	36.5	100

In the period under study, an increase in the number of students in the paid education sector of state educational institutions has been observed in the Republic. Despite the fact that educational institutions are state-run, they are only partially financed by the state budget. Accordingly, only a portion of students have had the opportunity of free study and they have had to compete for the privilege as it is paid for by the state. Thus in 1998-1999, 20,500 persons paid for their studies, in 2003-04 the number reached 36,739 persons and increased to 72,200 or 79 per cent, and their share in the total number of students increased by 12,300 or 12.6 per cent. In 2004, 65,400 or 65.7 per cent of the students in the state sector of education paid to study. Therefore, if the number of students in private educational institutions is added, it is found that the system of paid education comprises 58,755 persons or about 75 per cent of the total number of students. These figures indicate a trend to a further increase. The transfer to paid forms of study was carried out in the early 1990s, when a market economy and private property ownership were introduced into the post-Soviet economy of Armenia. Table 3 shows the total number of higher education students

who pay fees as numbers of students in thousands and the percentage that they represented between 1998 and 2004 (Statistical Review, 2004).

Table 3. Total number of students paying to study in the higher education system in the Republic of Armenia

Study year	Total number of students	Total of paying students	
		Number, in thousands	Per cent
1998-99	59.7	42.6	71.4
1999-00	61.7	45.1	73.1
2000-01	60.7	43.3	71.3
2001-02	65.6	48.6	74.1
2002-03	72.3	53.5	74.0
2003-04	77.9	58.7	75.3

Figure 2 shows the changes in the numbers of students in free and partly paid higher education as thousands of students in the Armenian Republic between 1998 and 2004 (Statistical Review, 2004).

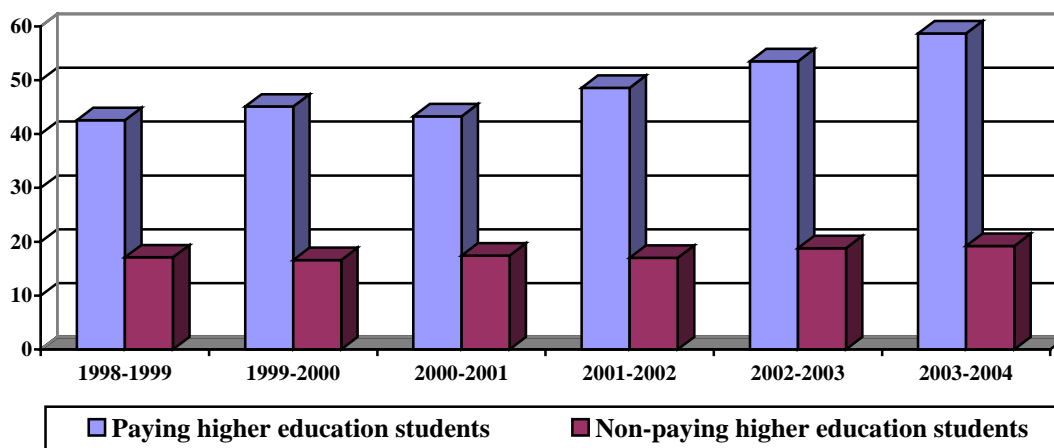


Figure 2. Number of paying and non-paying students in Armenia 1998-2004

In terms of gender, the number of male and female students in Armenia is almost the same, with a slightly higher number of female students. In the total population, 51.9 per cent or 1.7 million are women and 48.1 per cent or 1.5 million are men. These relationships are generally preserved in the sphere of professional education. Thus more than half of the whole number of students in educational institutions or 53.0 per cent is female. Their number in private educational institutions reaches 67 per cent, and in state-run institutions is equal to 51.5 per cent. Table 4 shows the distributions of females in the higher education institutions in Armenia from 1998 to 2004 (Statistical Review, 2004)

Table 4. Distribution of students in the educational institutions of Armenia by gender

	1998	1999	2000	2001	2002	2003
Students in higher education institutions, total (x1000)	59.7	61.7	60.7	65.6	72.3	77.9
Females, (x1000)	33.1	33.4	33.3	36.1	39.1	41.3
Proportion of females (%)	55.4	54.1	54.9	55.0	54.1	53.0

Figure 3 compares the number of female students to the total numbers of students in the higher education student population in the period between 1998 and 2004 (Statistical Review, 2004).

The largest part of female student population is in the field of education. This number is approximately 23 per cent of the total number of female students. The number of female students in industrial and agricultural professions is declining. At the same time, the number of female students in the professions of law, economics and education is increasing. The greatest number of

female students in private educational institutions is in the professional areas of law (about 21.2 per cent) and education (about 21 per cent). Table 5 shows the distribution, in percentages of female students in the Armenian higher education sector according to the subjects studied over the years 2000 to 2004 (Statistical Review, 2004).

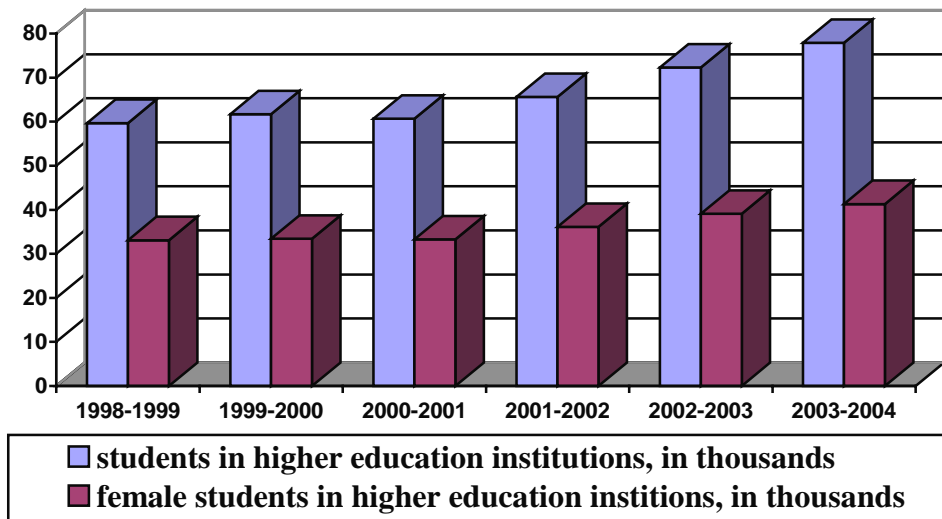


Figure 3. Total number of students and proportion of female students in higher education, in thousands

Table 5. Number of female students in the institutions of higher education in the Armenian Republic according to profession, expressed as percentages

	Industry	Agriculture	Economy	Law	Education	Health	Other	Total
2000-2001	8.6	2.3	16.0	1.8	19.8	6.8	44.7	100
2001-2002	9.3	1.9	14.7	8.2	24.2	7.7	34.0	100
2002-2003	2.0	0.6	18.2	17.6	20.4	6.4	34.8	100
2003-2004	2.9	1.5	21.4	8.7	23.4	7.1	35.0	100

The proportion of female students in state educational institutions represents about 46 per cent of students in the free sector, and about 55 per cent in the fee-paying sector. In total, the proportion of female students in state and private educational institutions is about 59 per cent. Table 6 lists the number and proportion of female students in the fee-paying and free higher education sectors by numbers expressed in thousands and as percentages in the population (Statistical Review, 2004).

Table 6. Female students studying in the paid sector of the higher education system

	1998	1999	2000	2001	2002	2003
Total number of students in the paid sector, in both state and private higher education institutions, in thousands	42.6	45.1	43.3	48.6	53.5	58.7
Female students, in thousands	24.2	23.4	25.0	28.0	30.4	34.7
Proportion of female, as a percentage	56.8	51.9	57.7	57.6	56.8	59.1

Figure 4 compares the changes in the number of fee-paying female students to the total number of paying students over the period from 1998 to 2004 (Statistical Review, 2004).

The evidence shows that there is a reasonably good gender balance in all sections of the sphere of professional higher education in Armenia. This means that the issue of expediency of receiving professional education does not depend on gender, despite differences associated with the compensation allowed for materials and other expenses. The level of unemployment in the Republic among females in the population is 12.8 per cent, and 5.7 per cent in the male population, indicating that about twice as many young females as males are not employed (Statistical Review, 2004).

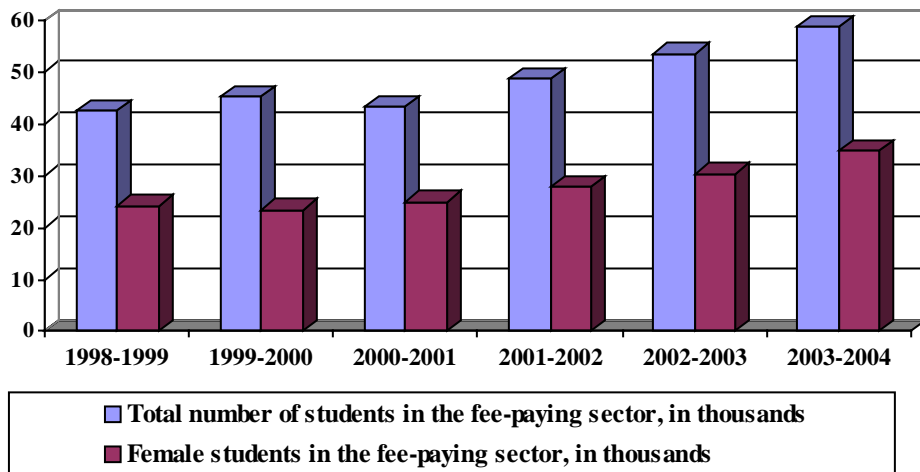


Figure 4. Female and total number of students in the fee-paying portion of the state higher education sector, in thousands

Financial support is the most important organisational issue in professional higher education in the Republic. At present, the decrease in budget financing of the expenses related to professional education and the increase of sources such as fees for educational services, together with assistance that is provided by various private structures, are characteristically part of the structure of financing sources.

About one third of expenses used in the financing of higher education expenses in state educational institutes comes from direct budget deductions. About half of all financing comes from fees taken for the study of which almost all is made by ordinary persons. The main source of financing in private educational institutions is the fees received for study. Table 7 shows the sources of funding used in Armenian higher education. The figures shown are expressed as percentages (Statistical Review, 2004).

Table 7. Content and structure of financing sources in the educational institutions of the Republic expressed as a percentage

Educational Institutions	2000 -2001		2001-2002		2002-2003	
	State	Private	State	Private	State	Private
Provisions from the budget	32.2	-	36.7	-	26.2	-
Total study fees	52.1	88.9	50.2	88.5	49.4	87.8
law students	7.2	9.6	4.9	6.7	5.4	2.6
other students	44.9	79.3	45.3	81.8	44.0	85.2
Income from other sources*	15.7	11.1	13.1	11.5	24.4	12.2

*including money for the services, provided to the people, other paid services, donations, rent and other income

CONCLUSIONS

On the whole, the considerable participation of legal professionals, their enterprises and organisations, is not characteristic of the system of financing of professional higher education that exists in the Republic. Such attitudes can be explained by the absence of interest shown in a given area, that occurs because of insufficient financial possibilities of economic subjects, the overall economic structure and particularly, because of the absence of intensive scientific production and research that are the principal users of highly qualified staff, as well as by the irregularity of the transition period, when the market mechanisms only function in part. In addition, the absence of indirect participation by the state could be performed by the mechanisms of tax stimulation by investors as well as other forms of monetary lending. The practical absence of profits from scientific research is characteristic of work performed by the educational institutions in the sphere of financing sources.

Thus, the rapid development of market relations is characteristic for the Republic, which is only indirectly regulated by the state. The low level solvency of the population whose average annual income is about United States \$600, results in a chronic shortage of budget funds. The state budget has had a constant deficit during the period under study, which in 2002 amounted to 0.7 per cent of Gross Domestic Product (*Statistical Review, 2004*). At the same time there is a rapidly increasing need for professional education. Important sources of funds in the area of higher professional education are borrowed against current assets, particularly as educational loans. This source of financing is absent in Armenia at present for a number of reasons.

Practical Implications

When providing educational loans, the specific nature of this type of lending should be taken into consideration, and in the first instance, the long-term character, the necessity of fixing a favourable regime of repayment under the terms of study, and the provision of low interest rates since the debtors are, in most cases, the people having financial problems at the time. As a result, the credit, currency, and interest risks are considerably increased. That is why, in case of this type of lending, the evaluation of solvency and creditability is of primary importance.

Lending is performed by various means. In our opinion, the traditional bank lending, taking into consideration the peculiarities of the given form of lending, is really unacceptable as at the present time banks provide long-term loans for terms of two to five years with an annual repayment rate of 15 to 24 per cent annually. In our Republic attempts to provide such loans are not made, despite the existing demand for such a service.

For the efficient functioning of a system of educational lending the creation of a number of conditions is necessary. The creation of a special non-banking loan organisation, having special status and an organisational form, that would act in the accumulation of funds and further allocation of loans is required.

A special role should be given to the state as the guarantor of the process, and should be under the direct and constant monitoring of the present organisation. At the same time the creation of the necessary laws and guidelines for the performance of this type of activity by all interested subjects, should also be the responsibility of the state.

The state can carry out the financing of the higher education area in this way by directing a considerable part of the provided budget funds to these institutions. In this case the financing is of subsidiary character, that is, it is carried out in some other procedure, by means of a lending mechanism, involving shared financing, with the aim of partial compensation for expenses. This would provide some reduction of budget expenses, since the funds that are provided would not be carried on the principles of non-return, non-term, or non-payment, which are characteristic for the budget financing, but undertaken on the principles of lending – involving repayment and return. The application of these principles also allows for the provision of the most efficient use of the available funds.

In the case of this type of financing the greatest performance of the most important obligation of the state, that is, the social function is also provided, since the allocation of funds would have a personalised character and would be provided to each socially deprived person.

The creation of this type of structure would allow the implementation, development and improvement in the system of educational lending. In turn, this would provide for the further development of the system of higher education, the increase of the population solvency, the reduction of social tension and the provision of social justice in society, since the possibility of receiving a corresponding higher education would be created for each gifted student.

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Predictors of self-regulated learning in Malaysian smart schools

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This study sought to uncover the predictors of self-regulated learning in Malaysian smart schools. The sample consisted of 409 students, from six randomly chosen smart schools. A quantitative correlational research design was employed and the data were collected through survey method. Six factors were examined in relation to the predictors of self-regulated learning. These factors were levels of IT-integration, student-teacher interactions, motivational beliefs, self-regulative knowledge, information literacy, and attitudes towards IT. Multiple regression analysis showed that levels of IT-integration, student-teacher interactions, motivational beliefs, and self-regulative knowledge significantly predict self-regulated learning in Malaysian smart schools.

Self-regulated learning, smart schools, levels of IT-integration,
motivational beliefs, student-teacher interactions

INTRODUCTION

The implementation of the Smart School Project in 1999 signifies a dramatic change in the Malaysian education system. This project aims systematically to reinvent the teaching and learning processes in schools, whereby information technology (IT) is utilised in every aspect of education (Ministry of Education, 2004). There are currently 90 established smart schools in Malaysia and by 2005 another 300 schools will be converted into smart schools. The use of IT tools, such as personal computers, educational software and the Internet, in these schools supports and enhances students' self-learning (School for Industry, 2002). In addition, smart schools teaching and learning concepts emphasise student-centred learning, active knowledge construction, as well as critical and creative thinking. It moves away from the conventional pedagogy, which focuses on teacher-centred learning, facts acquisition, and memory-oriented learning (Hussain, Hassan, and Sahid, 2001). As such, students have to construct their knowledge actively. Additionally, students have to self-direct, self-access, and self-pace in learning, without relying too much on teachers (Curriculum Development Centre, 2002). To put it in a nutshell, smart schools promote self-regulated learning among students (School for Industry, 2002). This paradigm shifts in the

Malaysian education system is vital as the mainstream teaching and learning processes lacks the substance to produce self-regulated learners (Malaysian Strategic Research Centre, 1994). Hence, it is not surprising that a great number of Malaysian students are actually passive learners and spoon-fed learners, who rely heavily on rote learning (Mustapha, 1998). The Malaysian Ministry of Education hopes that with the Smart School Project, the current scenario will be changed and more self-regulated learners can be produced by the school system. Self-regulated learners are efficient and independent learners. They metacognitively, motivationally and behaviourally promote their own academic achievement and are more persistent in learning (Pressley and Harris, 1990; Corno, 1986; Zimmerman, 1986).

In order to produce self-regulated learners as envisaged in the smart school concept, teachers must be able to gear the teaching and learning processes towards this goal. Many teachers, however, may not be able to do so as they are not aware of the factors related to self-regulated learning (Zimmerman, 2002). Even though many local educational research studies have been conducted on smart schools, there is no study on self-regulated learning in this particular setting to date (Educational Planning and Research Division, 2003). Furthermore, the teachers' in-service training does not provide teachers with adequate knowledge in this aspect (Ministry of Education, 1998). For these reasons, there is a need to uncover the predictors of self-regulated learning in Malaysian smart schools.

PREDICTORS OF SELF-REGULATED LEARNING

Literature reviews suggest that self-regulated learning is influenced by environmental and personal factors (Bandura, 1997, 1986, 1977). Environmental factors are divided into two categories: the physical context of a learning setting and the social experiences that students have during the learning processes (Zimmerman, 1997). There is now a substantial body of research showing that learning in IT-integrated environments is an active and constructive process (De Corte, 1990). Competency in self-regulated learning, thus, plays an important role in determining the success of learning. According to Lewis and Mendelsohn (1993), students in schools with a high level of IT-integration have more opportunities to self-regulate than those in schools with low or minimum level of IT-integration. This implies that levels of IT-integration in smart schools may predict students' self-regulated learning. The Malaysian Ministry of Education has classified the existing smart schools into three categories based on the levels of IT-integration: level A, B+ and B. Smart schools with level A technology are equipped with computerised classrooms, an electronic resource centre, computers in science laboratories, and a self-access centre. Schools with level B+ technology, on the other hand, are equipped with at least five computers in 15 selected classrooms. These schools also have computers in the computer laboratory. Schools with level B technology are only equipped with computers in the computer, and multimedia laboratories.

From a social environment perspective, students' interactions with teachers are the most important experiences that affect self-regulated learning (Zimmerman, 1989). Students may be more inclined to self-regulate if teachers promote student-centred learning, provide them with appropriate feedbacks during the teaching and learning processes, and teach them learning strategies (Butler and Winne, 1995).

Apart from the environmental factors, relations between motivational beliefs (intrinsic goal orientation, extrinsic goal orientation, self-efficacy, control beliefs, task values and anxiety) and self-regulated learning have been widely researched (Kwon, 2001; Riverto, Cabanach and Arias, 2001; Eom and Reiser, 2000; David, 1999; Pintrich and Roeser, 1994). These studies generally found that students' self-regulated learning is positively related to their motivational beliefs.

Recent research also suggests that other personal factors such as information literacy, attitudes towards IT, and self-regulative knowledge may influence self-regulated learning (Ee, 2000; Jukes, Dosaj and Macdonald, 2000). Students with positive attitudes towards IT and who are information literate tend to be better self-regulated learners in IT-integrated learning environments. These students may be more competent in utilising IT tools such as personal computers, the Internet and multimedia software to facilitate self-learning. Besides, students' self-regulative knowledge, which is their knowledge and beliefs about self-regulated learning strategies, is recognised as an important factor that can affect self-regulated learning (Zimmerman, 1989) because effective self-regulated learners know how, when and why they employ certain regulating strategies.

In short, levels of IT-integration, student-teacher interactions, motivational beliefs, self-regulative knowledge, information literacy and attitudes towards IT may predict self-regulated learning in smart schools. The relationships between these factors and self-regulated learning were examined in this study. Six research questions were formulated to guide the research.

METHODS OF RESEARCH

Research Questions

1. Do levels of IT-Integration predict self-regulated learning in smart schools?
2. Do student-teacher interactions (student-centered learning, feedback provided by teachers and strategy instruction) predict self-regulated learning in smart schools?
3. Do motivational beliefs (intrinsic goal orientation, extrinsic goal orientation, self-efficacy, control beliefs, task values, and anxiety) predict self-regulated learning in smart schools?
4. Does self-regulative knowledge predict self-regulated learning in smart schools?
5. Does information literacy predict self-regulated learning in smart schools?
6. Do attitudes toward IT predict self-regulated learning in smart schools?

Research Samples

The targeted population for this study was smart school students. According to the Curriculum Development Centre (2002) and the Ministry of Education (2004, 2002), there are at least 1000 students in each of the 90 smart schools. In other words, the population for this study consisted of approximately 90,000 smart schools students. Smart schools are scattered in Peninsular Malaysia and East Malaysia. However, due to cost and time constraints, only secondary schools in Peninsular Malaysia were involved. The population was sampled by cluster sampling methods.

Using a table of random numbers, six smart schools were randomly selected for this study, with two schools representing each level of IT-integration; level A, level B+ and level B. For example, in order to select two schools from level A randomly, the researchers first listed all level A schools and numbered them consecutively. Next, an arbitrary number in the table of random numbers was selected. The researchers only used the last two digits of the number as the schools in each level of technology were less than 100. If the number corresponded to the number assigned to any of the schools, it would be included in the sample. These steps were continued until the sixth school was selected. Two Form Four classes were then randomly chosen from each school.

A total of 409 students (average 16 years old) was sampled in this research, which is more than the minimum size of 383 students proposed by Krejcie and Morgan (1970). The appropriateness of this sample size was also determined with Cochran's Formula (1977), which suggests a size of 400 students.

Data Collection Procedure

The researchers obtained formal approval from the Educational Planning and Research Division (EPRD) to carry out this study. Upon receiving permission from the EPRD, clearance from the relevant states Education Department was obtained. Prior to data collection, a preliminary visit was paid to the schools' authority to explain the purpose and details of the study. During this visit, information such as the number of students and Form Four classes were collected. The date and time for the data collection was also arranged. The researchers then identified the class teacher involved and explained the purpose, procedure and importance of the study. The researchers were able to obtain cooperation from these teachers. In the second visit, the researchers administered the questionnaire. The purpose of the study was explained briefly to the students before they were required to fill in the questionnaire. Students were assured that their answers were confidential and would only be seen by the researchers. They were also told that the study was not concerned with them as individuals but only in averages or norms. Thus, it was important for them to answer the questions honestly. Students began to fill in the questionnaire only after they were clear about the instructions given.

Instruments

Seven instruments were employed to measure the variables in this study:

Self-Regulated Learning. Students' self-regulated learning was measured by the adapted Learning Strategies Scale, taken from the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Gracia, and McKeachie, 1991). This 7-point Likert scale measures students' usage of self-regulated learning strategies. Its items have to be modified and translated into Malay Language in order to apply in the local context. The revised instrument contains 56 items. After running Cronbach's alpha analysis, the scale was confirmed to be a highly reliable instrument (alpha coefficient = 0.92).

Levels of IT-Integration. Based on the information provided by the Ministry of Education, level of technology for each smart school involved was written in the questionnaire by the researcher, this was to facilitate data analysis.

Student-Teacher Interactions. Student-teacher interaction was measured by a 12-item Student-Teacher Interactions Scale, developed by the researchers. It was a 7-point Likert instrument written in Malay. The scale was divided into three dimensions: student-centered learning, feedback provided by teachers, and strategy instruction, or teaching and learning strategies. Its content validity was verified by a panel of experts in Educational Psychology, while the construct validity was supported by factor analysis, conducted prior to the study. Cronbach's alpha showed that the scale also had high level of internal consistency (alpha coefficient = 0.88).

Motivational Beliefs. Motivational beliefs were measured by the 33-item Motivation Scale, taken from MSLQ. This 7-point Likert instrument was developed by Pintrich et al. in 1991. There were six subscales in this instrument (Intrinsic goal orientation, extrinsic goal orientation, self-efficacy, control beliefs, tasks values, and anxiety subscales), which measured different motivational beliefs. Minor modification was done to the instrument to suit the local context. The revised scale was found to be highly reliable (alpha coefficient = 0.87).

Self-Regulative Knowledge. Students' knowledge about self-regulated learning strategies and their beliefs about the values of these strategies were measured by the Self-Regulative Knowledge. This 12-item instrument was written in Malay by the researchers. It was a 7-point Likert scale. A panel of experts in Educational Psychology verified the content validity of the scale and each item had been checked by language experts. Factor analysis was also carried out by the researchers to

establish its construct validity. Cronbach's alpha analysis indicated that the scale was highly reliably (alpha coefficient = 0.87).

Information Literacy. The Information Literacy Scale was a self-report instrument, developed by the researchers to measure students' abilities to access, process, and apply information from the Internet. This 10-item, 7-point Likert scale was written in Malay. A panel of experts in Educational Technology verified the content of Information Literacy Scale. Each item had also been checked by language experts. Even so, given that this is a newly constructed instrument, factor analysis and Cronbach's alpha analysis were carried out to ensure the validity and reliability of the instrument. Results showed that the scale had construct validity and it was reliable (alpha coefficient = 0.83).

Attitudes towards IT. The Attitudes towards IT Scale was employed to measure students' affective, cognitive and behavioral attitudes towards the application of computers and Internet in learning. This 7-point Likert scale consisted of 10 items, and was modified from Wong's (2000) Attitudes towards IT subscale and Jones and Clarke's (1994) Computer Attitudes Scale for Secondary Students. Items in the scale were written in Malay. A panel of experts in Educational Technology verified its content validity and every item was checked by language experts. Cronbach's alpha analysis confirmed that it was a highly reliable instrument (alpha coefficient = 0.83).

RESULTS

The researchers employed Pearson's product-moment correlation coefficient and standard multiple regression to analyse the associations between self-regulated learning and the six selected independent factors. Pearson product-moment correlation coefficients were obtained to ensure that the factors had at least moderate ($r \geq 0.30$) strength relationships with self-regulated learning. Factors which failed to meet this criterion were omitted from the multiple regression analysis.

Based on the results and feedback provided by teachers, a dimension in student-teacher interaction was not included in the analysis as it only had a small relationship with self-regulated learning ($r = 0.17$, $p < 0.01$). So were control beliefs ($r = 0.11$, $p < 0.01$) and anxiety ($r = -0.07$, $p > 0.01$), two of the dimensions in motivational beliefs. The researchers have also decided to analyze intrinsic goal orientation ($r = 0.29$, $p < 0.01$) and extrinsic goal orientation ($r = 0.36$, $p < 0.01$) as a combined variable, called goal orientation. Information literacy ($r = 0.02$, $p > 0.01$) and attitudes towards IT ($r = -0.01$, $p > 0.01$), were also excluded from the analysis as these two variables were not significantly related to self-regulated learning in smart schools.

Prior to multiple regression analysis, the researchers had also conducted exploratory analysis to test the various assumptions (ratio of cases to independent variables, normality, linearity, outliers, homoscedasticity, multicollinearity, and singularity) underpinning this analysis (Coakes and Steed, 2000). Since no assumption was violated, the standard multiple regression analysis could be carried out. The alpha level was set at 0.05. It is important to note that one of the independent variable, levels of IT-integration, is a categorical variable. It was coded as two dummy variables: level A and level B+ IT-integrations. The interpretation of these variables was relative to the excluded or referenced category, in this case, level B IT-integration. As such, five independent variables were actually entered into the regression equation simultaneously. The results of this analysis are shown in Table 1.

Table 1 shows that the R value was 0.72, which was quite high indicating that the linear regression model predicted well (Pallant, 2001). The obtained R^2 was 0.51 [$F(5, 403) = 84.48$, $p < 0.01$], showing that 51 per cent of the observed variability in self-regulated learning score was explained by the set of independent variables, included in the regression model.

Table 1. Multiple regression on predictors of self-regulated learning

Model	R	R ²	Δ R ²	F
Level A IT-Integration, Level B+ IT-Integration, Student-Teacher Interactions, Motivational Beliefs, and Self-Regulative Knowledge	0.72	0.51	0.51	F (5, 403) = 84.48**

** p < 0.01

In order to determine which of the factors contributed to the prediction of self-regulated learning, the standardised regression coefficients or beta weights (β) were examined (Table 2). 'Standardised' means that the values for the different variables have been converted to the same scale so that they can be compared. It revealed the relative predictive power of each variable independently after the contributions of all other variables in the model were controlled.

Table 2. Standardised beta coefficient of predictors of self-regulated learning

Variables	B	SE B	β	t	Sig.
Constant	1.59	.22		7.24	0.01
Levels A IT-Integration (dummy variable 1)	.68	.08	.38	8.90	0.01
Level B+ IT-Integration (dummy variable 2)	.11	.07	.06	1.49	0.14
Student-Teacher Interactions	.02	.00	.18	4.80	0.01
Motivational Beliefs	.71	.07	.38	10.30	0.01
Self-Regulative Knowledge	.01	.00	.13	3.33	0.01

Note: Level A IT-Integration and level B+ IT-Integration were dichotomies; they were compared to level B IT-Integration

Table 2 shows that the largest beta weight, 0.38, was recorded for motivational beliefs, and for level A IT-integration. The predictive powers for these variables were significant at the alpha value of 0.01. It meant that both motivational beliefs and level A IT-integration had equal and singular contributions in explaining self-regulated learning in smart schools, when the variance explained by all other variables in the model was controlled for.

The beta weight for student-teacher interaction, on the other hand, was 0.18, after other independent variables in the regression model were statistically controlled. This significant predictive power made it the second strongest predictor of self-regulated learning in smart schools.

The beta weight for self-regulative knowledge was 0.13, which was significant at an alpha value of 0.01. This result suggested that smart school students' self-regulative knowledge significantly explained the variance in their self-regulated learning scores. It was the third strongest predictor of self-regulated learning.

The lowest beta weight was 0.06, which was from level B+ IT-integration. An examination of the t-value indicates that the beta weight was not significant at the alpha value of 0.05. Such results showed that level B+ IT-integration could not significantly predict self-regulated learning, when other variables were controlled. It also implied that the relationships between levels of IT-integration and self-regulated learning mostly resulted from level A IT-integration alone.

Using the unstandardised coefficients, labelled as \underline{B} in Table 2, a regression equation was produced. This equation consists of the constant, level A IT-integration, level B+ IT-Integration, student-teacher interactions, motivational beliefs, self-regulative knowledge, and a residual value.

$$(\hat{Y}) = 1.59 + 0.68(\text{LEVA}) + 0.11(\text{LEVB+}) + 0.02(\text{STI}) + 0.71(\text{MB}) + 0.01(\text{SRK}) + e \quad (R^2 = 0.51)$$

where

\hat{Y} = Predicted self-regulated learning scores

Constant = 1.59

LEVA = Level A IT-integration (coded as 1)

LEVB+ = Level B+ IT-Integration (coded as 1)

STI = Student-Teacher Interactions
 MB = Motivational Beliefs
 SRK = Self-Regulative Knowledge
 e = Residual

Note: The reference group for level A IT-Integration and level B+ IT-Integration was level B IT- Integration (coded as 0).

Based on the unstandardised β coefficients for each independent variable (Table 2), self-regulated learning in smart schools can be predicted. In detail, students' self-regulated learning scores are expected to improve by 0.71 units or approximately 10 per cent with every one-unit increase in motivational beliefs scores, $t_{(403)} = 10.25$, $p < 0.01$. This result is within the realm of expectations since motivational belief is the underlying premise for self-regulation (Pintrich and Roeser, 1994). Improvement in this aspect may bring considerable positive changes to self-regulated learning in smart schools.

The results on IT-integration were interesting. When the level of IT-integration in smart schools is high (level A), compared to when it is low (level B), there is a predicted increase in self-regulated learning scores by 0.68 units, $t_{(403)} = 8.90$, $p < 0.01$. This implies that with all other variables held constant, students' self-regulated learning is expected to improve by 9.7 per cent when they are placed at schools with computerised classrooms, electronic resource centre, computers labs, and self-access centres, as compared to when they are at schools with only computer and multimedia labs. It also shows that students use more self-regulated learning strategies when they are in schools with a higher level of IT-integration. Currently, about 87 per cent of the existing smart schools have low levels of IT-integration. If the technologies in these schools are upgraded to the highest level, which is level A, students' self-regulated learning is expected to improve. On the other hand, when the level of IT-integration in smart schools is moderate (level B+), compared to when it is low (level B), there is an expected increase in self-regulated learning scores by 0.11 units. This improvement, however, was not statistically significant, $t_{(403)} = 1.49$, $p > 0.05$). Therefore, even if the technology of a smart school is upgraded from low to moderate, there will probably be no significant difference in students' self-regulated learning.

One possible reason behind this result is that the IT facilities in schools with level B and level B+ technology do not differ much. The former have computers in the computer and multimedia laboratories, while the later have additional five computers in 15 selected classrooms (Smart School Project Team, 2002). The effects of physical environment on students' learning in these schools may be quite similar; consequently, there is no difference in terms of self-regulated learning. It is also possible that students in level B+ and level B smart schools still depend more on conventional methods to learn. They may still be spoon-fed by teachers and are less self-directed, self-accessed, and self-paced, compared to their counterparts in level A smart schools. Overall, this study found that levels of IT-integration in smart schools had different effects on students' self-regulated learning. High level of technology integration in the learning setting seemed to influence self-regulated learning more positively and significantly, compared to moderate and low levels IT-integrations. As for student teacher interactions, every one-unit increase in this variable brings about an improvement of 0.02 units in self-regulated learning scores, $t_{(403)} = 4.80$, $p < 0.01$. For each additional unit in self-regulative knowledge scores, on the other hand, there is a predicted rise in self-regulated learning scores by 0.01 units, $t_{(403)} = 3.33$, $p < 0.01$. The expected increment in self-regulated learning scores, for both variables, is less than 0.5 per cent. For this reason, to create an impact on students' self-regulated learning in smart schools, student-teacher interactions and self-regulative knowledge has to be improved immensely.

DISCUSSION

Self-regulated learning is a relatively new and essential area of study in educational research, both locally and internationally. To date, few local studies have explored this topic and there was no investigation on self-regulated learning in Malaysian Smart Schools. Therefore, this study contributes by providing information to teachers as well as researchers on factors that predict self-regulated learning in these schools.

The findings show that high level of IT-integration, student-teacher interactions, motivational beliefs, and self-regulative knowledge are predictors of self-regulated learning in smart schools. More than half of the variance in students' self-regulated learning can be explained by these four factors, which indicates that to structure a learning environment that is conducive for self-regulated learning these factors should not be overlooked.

Levels of IT-integration and motivational beliefs have equivalent contributions towards self-regulated learning. This implies that both environmental and personal factors are important in students' self-regulation. Currently, about 87 per cent of the existing Malaysian smart schools have low level of IT-integration. These schools are only equipped with computers in computer and multimedia laboratories. The IT-facilities and infrastructure in these schools should be upgraded to produce a learning setting that supports self-regulation. Even though this may be costly, the returns will be worthwhile as smart schools have the potential to produce independent, proactive and self-regulated learners. It may change the negative perceptions of Malaysian students, which are stereotyped as spoon-fed or passive learners (Mustapha, 1998; Malaysian Strategies Research Center, 1994).

Results of multiple regression analysis also suggest that students' self-regulated learning does not differ in smart schools with moderate (level B+) and low levels of IT-integrations (level B). There are possibilities that students in these two categories of schools still depend more on conventional methods to learn. If this is the case, the Ministry of Education and the relevant authorities should re-evaluate the teaching and learning processes in these smart schools to ascertain that the learning activities carried out in these schools are congruent with the smart schools learning concept and that the provided IT-facilities are fully utilised. Since it takes time and money to upgrade the technology integration in level B+ and level B smart schools, perhaps these schools should improve students' self-regulation by focusing on the other three predictors of self-regulated learning. The results of this study show that improvement in student-teacher interactions, motivational beliefs and self-regulative knowledge may also bring positive changes to self-regulated learning.

Teachers can play a vital role in students' self-regulated learning by improving their interactions with students during the teaching and learning process. They may provide opportunities for students to manage their own learning activities. In fact, the learning activities in smart schools are expected to be more self-directed, self-paced, and self-accessed. These concepts are the catalyst to produce self-regulated learners. Nevertheless, teachers must be aware that students may have diverse needs and abilities for learning. Their differences in academic abilities, background knowledge, and interests, no doubt, may pose challenges to arrange for self-regulated learning activities in class. However, through trial and error, determination, and patience, teachers should be able to overcome these problems. Apart from promoting student-centered learning, teachers should also provide students with knowledge on self-regulated learning strategies. The teaching of learning strategies may enhance students' self-regulated learning. Lessons on these strategies can be conducted indirectly during the teaching and learning processes or specifically in separate sessions.

Self-regulated learning in smart schools can also be predicted by students' motivational beliefs (self-efficacy, goal orientations and task values). This finding shows that students not only need to know when, why and how to use learning strategies, but they must also be motivated to use them. Teachers should take initiatives to improve students' self-efficacy beliefs, perhaps by convincing them that they are capable of learning and executing the various self-regulated learning strategies. Students can also be prompted to use strategies to explore their interests on a specific topic, enhance their grasp on the school subjects, as well as to achieve better grades. This is because both extrinsic and intrinsic goal orientations are essential for self-regulated learning in smart schools. In addition, to improve students' perception on task values, teachers can provide them with learning tasks that are interesting, challenging, motivating, exploratory, and constructive in nature (Learning in an Electronic Age, 2002). Furthermore, as smart schools are IT-integrated schools, teachers can also utilise the available technology to produce and design interesting learning materials and learning tasks. For instance, students can be asked to design a web site for a History project, present their English essays with PowerPoint presentations, or complete their mathematics exercises using educational software.

CONCLUSIONS

This study looked into self-regulated learning in smart schools, an area of research that had yet to be explored (Roslan, 2004). The predictors of self-regulated learning were examined comprehensively as both environmental (levels of IT-integration and student-teacher interactions) and personal factors (motivational beliefs, self-regulative knowledge, information literacy, and attitudes towards IT) were taken into account. Results showed that a high level of IT-integration, student-teacher interactions, motivational beliefs, and self-regulative knowledge predicted self-regulated learning in smart schools. This finding has important instructional implications as it may guide teachers to structure learning environments that are conducive for self-regulated learning. The research findings are also congruent with social cognitive theory, in which both environmental and personal factors are found to be related to students' self-regulated learning.

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Transforming schools into democratic organisations: The case of the secondary schools management development project in Botswana

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As a democratic country which aims at nurturing and sustaining its envied democracy, organisations in Botswana are expected and encouraged to build and maintain democratic structures and principles. In September 1993, the Ministry of Education of the Republic of Botswana and the then British Overseas Development Agency (ODA) launched an ambitious joint venture, the Secondary Schools Management Development Project (SSMDP) whose main objective was to raise management standards in secondary schools through the democratisation of the structures which had hitherto been authoritarian. This paper is based on a quantitative study undertaken in a number of randomly selected secondary schools from all over the country after a decade of the launch. The paper evaluates the extent to which the SSMDP was effective in transforming the management of secondary schools in Botswana since 1993. However, it first gives a background by reviewing relevant literature in an attempt to showcase the nature of schools as organisations.

Transforming schools, management, secondary schools, Botswana

BACKGROUND

Almost all modern organisations, including schools have the characteristics of the Weberian Model of Bureaucracy which include a division of labour and specialisation, an impersonal orientation, a hierarchy of authority, rules and regulations, and a career orientation (Ball 1987; Harber 1991; 1995; Hoy and Miskel 1996; Dambe 1996; Buchanan and Huczynski 1997; Ballantine 2001). Ballantine (2001) further contends that schools are unique bureaucratic organisations due to their different purposes and structure.

Hanson (2003) explains this structural and organisational uniqueness by referring to the concept of 'loosely coupled systems'. The looseness of system structures and the nature of the teaching task seem to press for a professional mode of school system organisation, while demands for uniformity of product and the long time span over which cohorts of students are trained press for rationalisation of activities and thus for a bureaucratic base of organisation (Bidwell 1965). Sergiovanni (1995) explains that schools have multiple goals and are expected to achieve them, although they sometimes conflict with each other. He further argues that loose coupling does not mean that decisions, actions, and programs are unrelated, but that they are only loosely related to each other. Dambe (1996) contends that "... schools are dual systems, a combination of bureaucratic approach and loose coupling", an issue supported by Hanson (2003) who declares that schools require efficiency and predictability in a rational and programmed environment ("... impersonal, universalistic, and consistent behavior") while at the same time they demand a "... personalistic, idiosyncratic and flexible behavior". It has also been argued that schools are distinctive organisations because they are expected to transmit values, ideals, and shared

knowledge; foster cognitive and emotional growth; and sort and select students into different categories.

Harber (1997) contends that schools were organised bureaucratically to teach the impersonal, contractual values and relationships. The values reinforced in schools aimed at the functioning of the bureaucracy and the maintenance of social order such as obedience, abiding by the rules, loyalty, respect for authority, punctuality, regular attendance, quietness, orderly work in large groups, response to orders, bells and timetables and tolerance of monotony. Despite the negative connotations attached to these concepts, it has been argued that bureaucracy serves a vital function in society because it is believed to be the most efficient and rational form for organisations with goals of high productivity and efficiency. Traditionally, in pursuit of efficiency and effectiveness, schools have been, and are still structurally organised along bureaucratic lines; with the common feature of tight control, a somewhat rigid and inflexible dependence on top-down authoritarianism.

Handy and Aitken (1990) argue that, unlike other organisations which have layers of full-time managers, schools have two or three at the top and a few others as part of their job. In the former category are the school head, deputy and assistant head while in the latter are heads of departments and senior teachers grade one who have to contend in most cases with normal teaching duties, thus allowing for very little time for management. Due to the nature of the structure and purposes of schools described above, the only viable options available for the management of schools were either autocracy or autonomy.

The latter method, autocracy became the most favoured by educationists and therefore dominant, with the managerial task placed in the school head's office with all decisions being sanctioned and taken at his or her desk only. The school head also assumes all responsibility as the other colleagues needed time to prepare, teach and mark students' work. Autocracy suited the bureaucratic organisation as it can be personal and charismatic or it can be exercised more formally through rules (schools rules), procedures (management manuals and supplies procurement manuals), and regulations (Code of Regulations, secondary schools regulations), and school handbooks or prospectus.

However, it should be pointed out that there are some disadvantages militating against running a bureaucracy like a school by autocracy; for instance it overloads the top of the pyramid because all decisions drift up to the top of the organisation. In such situations where management attempts to free teachers to perform their core job of teaching, they end up performing odd jobs like collecting mail, arranging sports trips, laying out the school hall for examinations, punishing students for making noise in class or not doing home work; jobs which in other organisations could be done by junior officers because management is managing – getting the job done through others. As a result, school heads end up being overworked, stressed and frustrated with a lot of backlogs of important and crucial work, and in most cases with more nutcases of heads who masquerade as tyrants or dictators to mask their insanity.

Autocracy was ideal for small systems in that it is believed to facilitate efficiency and effectiveness. Handy and Aitkin (1990) posit that "... realistically, autocracy loses touch if there are more than 15 to 20 subordinates, degenerating into dictatorship", sometimes leading to anarchy. Secondary schools in Botswana have grown, both in size and purpose, into very big and complex organisations. For instance, a small junior secondary school with six streams has 240 adolescent students, about 21 teachers, 25 support staff, 14 subjects, a large and sophisticated infrastructure, and a wide catchment area sometimes with boarding facilities and their inherent problems (profile of Lehututu Community Junior Secondary School in the Kgalagadi District of the Republic of Botswana in 2003). A senior school can have up to 1,800 students of ages ranging from 15 years to 22 years divided into 42 normal classes with various options resulting in over 20

subjects being offered, 100 teaching staff, 100 support staff and a very wide catchment area. What seems not to have changed is that secondary schools have inherited the managerial traditions appropriate to smaller and simpler places, and hence school heads are battling and struggling to run large, irrational and complex organisations (schools) in their spare time, single-handedly, autocratically and end up losing both their sanity and the quality of the output.

EDUCATION AND DEMOCRACY IN BOTSWANA

As happens all over the world, especially in the developing countries, schools in Botswana were, and to some extent are still organised along the authoritarian-bureaucratic model that predominantly is found in commercial and industrial organisations. However, Handy and Aitken (1990) warn that schools may be adopting a system of management that is already outdated as modern businesses are moving away from hierarchies to networks that are more flexible and people friendly. The authoritarian-bureaucratic model was transported to Africa from Europe during the colonial period in order to inculcate the skills and values necessary to provide the subordinate African personnel required for the effective functioning of the imperial administration. According to Harber (1997), "... the ministerial bureaucracies of states in Africa, learning from their colonial administrators, often attempt to manage schooling through strict, centralised regimes". This is further compounded by the fact that traditional political systems indigenous in most African societies were autocratic, authoritarian and paternalistic, with power concentrated in the hands of a few individuals. It has been argued further that such methods promote educational processes that are undemocratic and bureaucratic which ultimately strengthen the control of a centralised bureaucracy over teachers and students (Carnoy and Samoff 1990).

Botswana attained her independence from Great Britain in September 1966 after having been a protectorate since 1885. It adopted the Westminster type of democracy. The Government of Botswana was, and is still, committed to the ideals of a democratic society and recognised the role that education can play in reinforcing and nurturing the ideals and values of democracy for the sake of national unity (Republic of Botswana 1977). This argument has been recognised and emphasised by Harber (1989) when he asserts that "schooling should enhance democratic skills, values and behaviours necessary to sustain democratic political institutions". The importance of democracy in nation-building was also recognised by the first leaders of Botswana who made it one of the four national principles:

Puso ya batho ka batho – democracy implying a voice for all the people in their future, not only in political elections but also in community, social and economic affairs as well. (Republic of Botswana 1977)

The first Commission on Education of 1977 took further the principle of democracy and emphasised that the structure and organisation of education must reflect the four national principles and that any features of the education system which impaired democracy should be changed. It was therefore emphasised that schools themselves were small communities and the life of the schools and colleges should give expression to Botswana's basic principles including democracy so that young Botswana could be expected to understand and cherish it. Unless this were pursued and achieved, and schools and colleges continued to show quite opposite tendencies, it would be meaningless to speak of democracy and the other national principles. According to the Commissioners, democracy involved giving each mature person a voice in the running of affairs and the chance to participate, directly or through representatives, in decisions affecting their lives. If democracy were to be achieved, people should have sufficient and relevant information to make wise decisions that should be respected.

The implications of implementing democracy in education, particularly schools are many and varied in nature. First, many decisions about how schools are run should be left to all the

stakeholders who are affected: "... the community and parents, professional workers in education, and the pupils themselves" (Republic of Botswana 1997). This decision calls, first, for the establishment of democratic structures such as Boards of Governors, Parents Teachers' Associations, Senior Management Teams, and many others. Second, teachers and other educational professionals should be consulted about any reforms and the resultant changes affecting their conditions of service. Such consultations require that teachers should be given the opportunity to comment on and participate in the impending changes.

Third, teachers should be involved and fully participate in the "... work of syllabus change and curriculum reform". Fourth, at the school level, this would call for school heads and college principals to hold consultations on all important matters with their teachers and lecturers through regular staff meetings and briefings. Staff meetings should represent the National Assembly as a place where school policies and decisions were made, instead of the traditional head's office. Democratic procedures, values and norms should be instilled and recognised through such activities as fair and transparent procedures in filling vacancies and electing people into committees and task teams. Promotions should be transparent and based on procedures that were understood by everybody in the school, and not only the School Management Teams.

THE SECONDARY SCHOOLS MANAGEMENT DEVELOPMENT PROJECT

This section presents in the form of a table (shown in Table 1) the aims and objectives of the project together with the indicators of achievement and value as illustrated in an evaluation carried out in 1995 (Anderson and Basiamang 1995).

According to Anderson and Basiamang (1995), the ODA's input into the project included six Overseas Appointment Staff (OSAS): five were paired with their local counterparts under the title School Management Advisers and were based in the Regions, and the other one based at Headquarters in Gaborone was a Joint Coordinator with a local, but later became the Secondary Schools Management Development Officer. It also offered support for in-country workshops in the form of expertise. Of importance was the establishment of school clusters and School Staff Development Teams that organised and managed school-based workshops, which became the professional backbone of the project as vital information was shared among and between schools and individual teachers during such gatherings. The ODA also provided nine long-term training awards over three years and eighteen short-term attachments. Over £30,000 (British Pounds) worth of books for Education Centres' libraries and the central resource centre were made available to the project, while £305,100 were used for training. It was a joint venture and all these financial and human resources led to a new era in the management of secondary education in Botswana.

It can therefore be assumed that due to the joint venture, secondary schools would be effectively and efficiently managed; there would also be an improvement in the delivery of the academic program in schools as a result. A structured program for on-going management training was introduced through a flexi mode run by the University of Bath, with an initial cohort of 24 school heads enrolling. School-based in-service training catered for the management teams and the senior management personnel in the schools.

PURPOSE OF THE STUDY

In order to meet the democratic requirements as stipulated by the first National Commission of 1977 and the demands of the changing times as illustrated above, the Botswana Government in 1993 entered into an ambitious joint venture with the then British Overseas Development Agency (ODA) now the Department of Field International Development (DFID) "... to raise the standards of secondary education" in Botswana (Anderson and Basiamang 1995).

Table 1. Objectives, indicators, and assessment (after Anderson and Basiamang 1995)

Project Structure	Indicators of achievement and value	How indicators can be quantified and assessed
1. Wider Objectives		
1.1 To raise the standards of secondary school management in Botswana.	<ul style="list-style-type: none"> • More efficient and effective schools. • Closer inter-relation between school and local community. 	<ul style="list-style-type: none"> • School records: including school log book, minutes of B.o.Gs, staff and HOD meetings. • CEO records, observations and reactions.
1.2 To ensure that all secondary school resources – human, physical, financial and material – are used carefully and cost effectively.	<ul style="list-style-type: none"> • Responsible, knowledgeable B.o.Gs meeting regularly and making decisions within their powers and competence. • Universal compliance with TSM regulations and procedures. 	<ul style="list-style-type: none"> • Visits by school management advisors, and external evaluators. • Audit reports from Auditor general Department, Financial Advisor, and private auditors. • Reports from school management advisors, EOs and subject advisors. • BGCSE and JC results.
2. Immediate Objectives		
2.1 To create a favourable climate among heads and deputies for innovation and change as a means of achieving better school management.	<ul style="list-style-type: none"> • Satisfactory audit inspections. • More efficient school timetables and organisation of teaching. • Closer links between formal and non-formal education in use of resources. • Marked improvement in EO support. • Increase in school visits by all secondary school heads Co-co/ PAL. • Positive school level contribution to the introduction of new curricula. • Teacher input into new applications of continuous assessment techniques. • Teacher attendance and support for school-based/cluster workshops. 	<ul style="list-style-type: none"> • Reports of SMAs, EOs and subject advisors. • Records of school visits by various Ministry personnel. • Feedback from CDU and ERT and D. • Feedback from heads. • BGCSE/JC results.
2.2 To improve school learning and teaching conditions and create greater opportunities by optimising use of physical plant, teaching time, manpower, and teaching areas.	<ul style="list-style-type: none"> • Satisfactory audit inspections. • Tighter budget and expenditure control. • Teachers on full teaching loads. • 80% minimum use of teaching areas. • Improved student performance. • Time-tables conducive to effective learning. 	<ul style="list-style-type: none"> • Audit reports.
2.3 To initiate, plan, and implement a structured program of pre-service and in-service training for heads and deputies.	<ul style="list-style-type: none"> • Teacher/student ratio maintained at 1:24 for junior sec and 1:19 for senior secondary schools. • Development of basic training programs, and long-term training program. • Procedures to monitor, evaluate, and revise such programs. • Improved managerial performance by heads in decision-making, school records, control of finance, interpersonal skills and use of correct procedures. 	<ul style="list-style-type: none"> • Reports from school management teams, EOs and subject advisors. • BGCSE/JC results.
2.4 To reinforce the program of training by producing support materials appropriate to secondary school management development in Botswana.	<ul style="list-style-type: none"> • Production of support materials and their use in schools. • Procedures to ascertain and monitor use; to revise and upgrade where needed. • Closer contact and interaction between Secondary Department and individual schools. • No professionally isolated headmasters. 	<ul style="list-style-type: none"> • Reports of management teams, CEO and MoE personnel. • Feedback from trainee heads of schools through recorded visits and questionnaires. • Observations of external evaluator and coordinating committee. • Support materials exist and in use. • Positive feedback from trainees and from Ministry officials. • Reports of external evaluators.
2.5 To establish a permanent structure of secondary education management training, with recognised routines and planned work strategies.	<ul style="list-style-type: none"> • Development of a structure career ladder for teachers and school management personnel. • Programmed training and interlocking study courses, in-country, regionally, continentally and overseas, for school management personnel. • Efficient school monitoring system. 	<ul style="list-style-type: none"> • Reports from Ministry of Education personnel. • Comments of external evaluators and co-ordinating committee. • Support of Heads Conference and its Executive. • Reports of follow-up visits after workshops/training courses.

This paper therefore argues that the introduction of the Secondary Schools Management Development Project in 1993 was *inter alia* aimed at democratising secondary schools' management structures in the belief that this would ultimately enhance the performance in the teaching and learning processes. It has also been argued that the aim of introducing democratic structures at school level would enhance the democratic principles and values in society. Schools as parts of the wider social and political community that espoused democratic values and norms were also expected to reflect these both structurally and operationally; in other words they should be democratic organisations. The paper provides an initial evaluation of the impact of the introduction of democratic ideals in the domain of traditional autocratic and authoritarian school management structures.

THE STUDY

This study had five specific aims:

1. to establish the extent to which respondents knew and understood the main goals of the SSMDP;
2. to find out how the main goals of the SSMDP were (to be) achieved;
3. to establish indicators of achievement and values of the objectives of the SSMDP;
4. to identify problems encountered by the SSMDP; and
5. to identify some of the achievements of the SSMDP.

Sample

This research study targeted secondary school teachers in Botswana, with particular emphasis on members of the School Management Teams (heads of schools, deputy heads, heads of departments and senior teachers grade 1) who were randomly selected from secondary schools across Botswana. This group was targeted for two main reasons: first, because the program was tailor-made for those in management; and, second, because almost all those who were in the field at the inception of the program a decade ago are members of the SMTs and therefore are in a better position to shed well informed information. Eighty postal questionnaires were distributed to the schools.

The Postal Survey

The questionnaire

The questionnaire included a mixture of closed and open-ended questions. The closed questions were based on a five-point Likert-type scale that solicited the degree of agreement of the respondent to a given statement. The open-ended questions gave respondents the opportunity to express their own opinions in their own words.

The first two questions required the respondent to give biographic data, which in retrospect did not contribute much to the study; the next 12 questions sought to establish how the main goal of raising the standards of secondary education management in Botswana was to be attained. The respondent was to indicate his or her degree of agreement with a given statement on a 5-point Likert Scale ranging from strongly disagree with 1 point to strongly agree with 5 points. The next five questions asked the respondent to showcase what the SSMDP did to achieve the main goals. The next 18 questions wanted the respondent to identify and rate the indicators of achievement and value of the objectives of the program. A further six questions required the respondent to list any problems encountered while the last nine questions asked what were achievements of the program.

The open-ended section of the questionnaire comprised five questions which sought to establish whether the respondent understood the aims of the SSMDP; whether the SSMDP achieved its aims and reasons for the answer given; strengths of the program and why; shortcomings and reasons; and the way forward. The purpose for including open-ended questions in the questionnaire was to allow respondents to give further information that might not have been captured by the structured questionnaire.

Return rate

Of the 80 questionnaires distributed, 58 were completed and returned, representing a response rate of 72.5 per cent.

Data analysis

For the closed questions, data were analysed using the Statistical Package for the Social Sciences (SPSS). For the open-ended questions, data were coded according to the emerging themes and patterns.

RESULTS AND DISCUSSION

Goals of the SSMDP

Data from this category are presented in Table 2 with percentage agreement shown against each theme. It is clear from these results that the goals were met.

Table 2. Variables used to measure effects of the Project^a

Variable	%
Raising standards of management	98
Resources used cost effectively	90
Democratising school management	89
Resources used carefully	84
Encourage efficiency in teaching and learning	78
Foster school/community relations	69
Fostering closer link between formal/non-formal aspects of schools	69
Establishment of responsible/knowledgeable Board of Governors	53
Compliance with TSM regulations	48
Empowering Board of governors through training	47
Ensuring that Board of Governors meetings are held regularly	41
Targeting Community Junior Secondary Schools only	21

^apercentage agreement recorded

Achievement of the Main Goal

In order to achieve the main goal of raising standards of management in Botswana secondary schools, respondents agreed that the goals in Table 3 were the main achievements of SSMDP.

Table 3. How the main goal was achieved^a

Variable	%
Created favourable conditions for heads/deputies	91
Created favourable climate in schools	91
Established permanent training structure	82
Improved school teaching and learning conditions	72
Created optimum use of resources	70

^apercentage agreement recorded

Indicators of Achievement of Main Goal

The respondents overwhelmingly agreed with the following key indicators of achievement of the main goal of the SSMDP (see Table 4).

Table 4. Indicators of achievement^a

Variable	%
Regular school based workshops	97
Knowledge sharing among staff	97
Establishment of school development plans	93
Existence of staff development committees	93
Establishment of mission statements	91
Establishment of effective SMTs	91
Improved managerial skills by heads	90
Existence of whole school policies	90
Power sharing among stakeholders	88
Improved inter personal skills	86
Structured pre- and in-service for SMT's	81
Improved control of finance by schools	78
Improved student academic performance	78
Dialogue with communities	66
School friendly inspections and audits	62
Clear duties of SMAs	60
Improved support from headquarters	59
Motivated heads and deputies	53

^apercentage agreement recorded

The responses in Table 4 indicate that schools regard the main goal of SSMDP as being met.

Problems Encountered by the SSMDP

Although the program can be said to have been a great success, there were problems that were faced by those who were involved as indicated in Table 5.

Table 5. Hurdles faced by the SSMDP^a

Variable	%
Sabotaged, resisted by headquarters	52
Aims clashed with those of TTandD	49
Structure fluid, directionless and lacked sustenance	48
Viewed as inferior by senior schools	48
Did not fit into established structure	43
Viewed at as remedial, add-on for CJSS	34

^apercentage agreement recorded

The results in Table 5 illustrate that the program was well accepted by all stakeholders and its structures were in line with those already in existence.

Achievements of the SSMDP

Despite some of the hurdles encountered, it was apparent that the SSMDP achieved much, especially in the improvement of secondary school management in line with democratic principles. Some of the perceived achievements are shown in Table 6.

Open-ended questions

As stated above, the postal questionnaire included five open-ended questions that provided a check to responses in the closed section. The first question wanted the respondent to give his or her opinion of what the aims of the SSMDP were. The second question wanted the respondent to state whether the program achieved its aims and to give reasons why they said so. The third question sought to establish the strengths of the SSMDP, justifying why they thought they were

strengths. The fourth question wanted to establish the weaknesses or shortcomings with reasons why they were so categorised. Finally, the respondent was asked to map the way forward.

Table 6. Achievements^a

Variable	%
Improved management capacity in schools	90
Inculcated democratic values in school management	90
Exposed lack of implementation capacity of MoE	81
Improved teaching/learning processes	79
Facilitated the gender movement in secondary schools	79
Gave birth to the PSMDP	78
Enhanced staff development in schools	76
Establishment of Flexi Mode	73
Expanded recruitment base for Ministry of Education	60

^apercentage agreement recorded

Aims of the SSMDP

From the responses received, it is apparent that schools were, and are aware of, the aims and objectives of the SSMDP. The overwhelming majority of respondents identified the following as the main aims of the program:

- to improve the management of secondary schools in the country;
- to bring about excellence in schools through improved teaching;
- to develop coordinated staff development in schools and facilitate full-time training for managers of secondary schools; and
- to inculcate the spirit of transformational leadership in secondary schools.

Improvement of management of secondary schools

One respondent believed that this objective was achieved through the improvement of management development skills of the school heads and other senior staff in the schools, as well as to promote staff development at school level. This view was also supported by another respondent who emphasised that this was done through the development of management structures, skills and knowledge, through in-service and formal training of senior staff and sharing of knowledge and good practice among staff. In addition, one respondent believed that the improvement of management was also achieved by providing in-service workshops on management issues to promote good practice, collaborative management, greater accountability, including capacity building and problem solving skills.

Improved teaching

The SSMDP was also introduced to improve the management of schools so that the core duty of schools could be improved. From the responses received, it was evident that the program was able to improve the teaching process. For instance one respondent declared that as a result of the program, teachers became involved and informed about decisions taken by management and therefore were able to own up and worked hard for the benefit of the students. Teachers became motivated as they were consulted and participated in the management of the schools. Yet another respondent was of the view that the program arranged schools into manageable clusters for effectiveness, and teachers from different schools collaborated and prepared materials together as a team.

Staff development

As illustrated above, the SSMDP aimed at improving the management of schools. One way of doing this was through the development of a coordinated staff development program and provision of full time training for managers of secondary schools. Some respondents cited the establishment of Staff Development Committees, school-based workshops and Cluster and Regional workshops as having played a major role in facilitating staff development for school heads. Other respondents also believed that the introduction of the University of Bath program for School Heads who studied for a Masters Degree was a milestone in the development of school managers in the country. This point was further emphasised by a respondent who declared that it created a quick advancement of individual school heads to acquire Masters degrees through a flexible mode of delivery. Another structure commonly mentioned was the existence of the School Management Advisers at Regional level with their visits to schools, which kept the heads of schools on their toes. These Advisers also provided on the job training that was very contextual and economic.

Democratisation of schools

One of the aims of the program was to democratise school management and other structures. As one respondent posited, such a move would enhance school management by introducing a paradigm shift from the traditional one-man show to a more participatory management approach characterised by transparency and democracy. Another respondent emphasised that it aimed at improving team-work in educational management while a further respondent asserted that it enabled school heads to manage human resources in a democratic way, and it promoted transparency among school heads and the SMTs. Yet other respondents felt that it encouraged decentralisation at school level by allowing every member of staff to participate in the management of teaching and learning. Another respondent went further by contending that it enabled school heads to understand the importance of including students in decision-making.

The majority of respondents were of the view that the program achieved its mandate of improving the management of secondary schools in Botswana through the democratisation of schools. This point of view was captured succinctly by a respondent who asserted that SSMDP achieved its objectives as schools were democratically run through SMTs; it was no longer the school head doing the job of management alone. There was collective bargaining in all schools. It also gave birth to more women managers in education through the Women In Educational Management (WIEM).

Another respondent also believed that the aims were achieved to a large extent because school heads were trained and were being trained in educational management. School-based workshops continued to be held to improve the twin processes of teaching and learning; and schools were better managed than before the SSMDP.

One respondent posited that the program's achievements were also reflected in the availability of accountability documents such as school development plans, whole school policies, school visions and mission statements in schools.

Strengths of the SSMDP

There were some factors that facilitated the success of the program. As one respondent asserted, it was led by people who had expertise (initial team leaders and SMAs) who did not impose but believed in consultation; and were also given enough funds and resources for workshops. This view was reiterated by another respondent who claimed that involvement of some knowledgeable school heads in resourcing workshops helped in disseminating managerial skills to all secondary

schools. At least people became aware of the skills needed in the management of schools and education in general.

According to some respondents, structures such as school based staff development (workshops), staff development committees, staff development coordinators, Strong SMTs backed by support from the Joint SMAs and Coordinators, Regional Education Officers and a strong National Leader gave impetus to the program. One respondent observed and lamented at the same time that initially there was great zeal from both ends to succeed; and the programs it embarked upon had been sustained and brought about change and innovation though some died a natural death due to the transfer and resignation of the pioneers of the program. The current officers were not creative enough and could not cope with the challenges faced by the heads.

Some respondents believed that the nature of management approaches and other structures that were in existence and based on traditional practices made the ideas of the program more appealing, and therefore provided a firm base for success. One respondent declared that most of the heads, especially in the Community Junior Secondary Schools did not know anything about management as they were promoted due to lack of qualified personnel. They were therefore happy to try the new ideas. Another claimed that schools were run like private businesses before the program and most of the teachers were not happy with previous autocratic rule, therefore they accepted the program.

Shortcomings of the SSMDP

One respondent claimed that the SSMDP lacked sustainability when it came to some projects such as Peer Assisted Leadership and Co-Consultancy due to insufficient funds at school level to carry out the activities. Another respondent cited lack of evaluation structures as one of the main weaknesses of the SSMDP. Many respondents as indicated above believed that one of the main problems faced by the program was too much staff turnover due to resignation of officers, redeployment to other departments or areas, promotions and transfers of officers. The new officers were then not trained like the pioneers, and this lack of commitment to standards impaired the program. This was succinctly captured by one respondent who declared that the SSMDP started off very well but as soon as the leadership changed it lost its vigour and momentum. There were irregular follow-ups to schools. One said that it lacked direction, and had no clear vision of where it was going. Another claimed the Ministry of Education was not very supportive of the program after the contract of the donors came to an end.

The Future of the SSMDP

It is clear from the above that the program was necessary for the development and sustenance of good practice in school management. Therefore most of the respondents felt that the future of the program could be achieved through the following objectives:

- provision of the necessary resources which included human, financial and other things like time for workshops;
- appointment of more SMAs and raising the post to the level of Principal Education Officer 1 in order to retain them in office, and the appointment of more SMAs to allow for follow-up visits and continued support to schools;
- SMAs should be relieved of the administrative duties of the Ministry of Education so that they could concentrate on field-work and the establishment of SSMU (Secondary Schools Management Unit) in the Ministry; and
- sabbatical leave should be accorded to those who were doing their studies.

The way forward was summarised by a respondent who suggested that a more comprehensive strategic plan should be drawn which should be known and acknowledged by all stakeholders. An evaluation process should also be incorporated in the strategic plan. More funds should be provided to schools to facilitate school based workshops in order to promote staff development.

CONCLUSIONS

The findings of the study indicated that the Secondary Schools Management Development Program was an overwhelming success. For instance, 98 per cent of the respondents were in agreement with the view that it met its main objective of raising the standards of management. This, according to 89 per cent of the respondents, was a result of the introduction of democratic structures, values and principles in the secondary schools education system. Team-work became the guiding principle in the management of schools whereby consultations and collaboration among stakeholders in schools were encouraged.

The results also showed that resources were used carefully and cost effectively in the schools as a result. Structures such as school based workshops and clustering of schools for purposes of sharing ideas were cost effective when compared to workshops that were organised centrally and which took teachers out of schools for a long time and paying for transport and hotel accommodation. School based workshops centred on clusters meant that such events could be held in the afternoons without students missing too much school work. Sharing of ideas led to the breaking of isolation that had traditionally characterised teaching.

As illustrated in Table 3, the main goal of raising standards of management was achieved through creating favourable conditions for heads and deputy heads (91%) as well as establishing permanent training structures (83%). Training was viewed by the program as a viable strategy in meeting its goals. Training empowered those targeted with the necessary knowledge and skills. As was the case, most of the heads of schools had no training in management but were promoted because they were good classroom teachers. Their classroom management skills which guided them could be said to have been clashing with the management of teachers who were adults.

From the above results, it must emphatically be concluded that the program was a success although it needed to be nurtured and sustained as the times and structures were in constant change. There was also a need to find out how the improvement of management impacted on the twin processes of teaching and learning.

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Adaptation of an emotional intelligence scale for Turkish educators¹

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Schutte et al.'s (1998) emotional intelligence scale was adapted and administered to 177 Turkish educators. Confirmatory and exploratory factor analyses were performed. In order to confirm the authors' model and findings of previous research, one, two, three, and four factor models were examined. It was decided that the one factor model fitted the data better for the selected sample. In addition, gender, age, and job experience of the participants were also investigated in conjunction with their emotional intelligence scores. However, the emotional intelligence scores did not differ for any of these variables. Male and females scored similarly. Also, it was revealed that emotional intelligence scores of the participants did not differ as their age and job experience increases.

Emotional intelligence, reliability, modelling, scale adaptation, gender, Turkey

INTRODUCTION

The introduction of Emotional Intelligence has led to the emergence of various scales and they were studied in relation to various of variables such as sex (Charbonneau and Nicol, 2002; Saklofske, Austin, and Minski, 2003), IQ (Saklofske et al., 2003); leadership (Charbonneau and Nicol, 2002; Humphrey, 2002; Wolff, Pescosolido, and Druskat, 2002); personality (Lopes, Salovey, and Straus, 2003; Newsome, Day, and Catano, 2000); quality of social relationships (Lopes et al., 2003); life satisfaction, and academic achievement (Newsome et al. 2000).

Yet, the psychometric features of these scales are somewhat problematic. For some researchers, the most commonly discussed scale is the *Emotional Intelligence Scale* developed by Schutte, Malouff, Hall, Haggerty, Cooper, Golden, and Dornheim (1998). It is referred to, for instance, by Charbaoneau and Nicol (2002), Petrides and Furnham (2000), and Saklofske et al. (2003). Schutte et al. (1998) have explained the trait of emotional intelligence as a single factor. According to Petrides and Furnham (2000), however, the scale has failed to show emotional intelligence as a single factor. Another confirmatory finding is provided by Saklofske et al. (2003) who go further and add that fewer than four factors would not be appropriate for this particular scale.

Emotional intelligence and its relationship to leadership behaviour have also been studied by researchers. For example, Charbonneau and Nicol (2002) have conducted research to account for adolescents' leadership behaviour and its association to emotional intelligence. They have found that Schutte et al.'s (1998) scale may be problematic for use with adolescents because some items

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may not be well suited for this age group (mean age of $\bar{X} = 14.3$, $SD = 1.1$). They also believe that only some aspects of the emotional intelligence are related to leadership.

PURPOSE OF THE RESEARCH

Based on the literature, the aim of this study, therefore, is to evaluate whether it is possible to utilise Schutte et al.'s (1998) scale with Turkish educators. A further aim is to investigate the psychometric properties of the scale. More specifically, the objectives of the research are (a) to test whether Schutte et al.'s (1998) *Emotional Intelligence Scale* is unidimensional or multidimensional for the Turkish sample; (b) to investigate the internal consistency of the scale for the sample; (c) to test the hypothesis that women are likely to score higher; (d) to test whether scale scores of the sample differ with age; and (e) to test whether scale scores of the sample differ with their job experience.

METHOD

Participants

Participants were 177 administrators (principals and assistant principals) and teachers (152 teachers, 25 administrators), who were serving in public elementary schools in Bolu, Turkey during the 2001-2002 academic year. Bolu is a city of approximately 75,000 people in the northwest of Turkey. Of the sample, 128 (72.3%) were males and 47 (26.6%) were females, and two (1.1%) were not reported. The participants were volunteers and the mean age for the sample was 34.6 years ($S.D. = 8.0$).

Instrument

The *Emotional Intelligence Scale* was developed by Schutte et al. (1998). It is a 33-item scale with a five-point Likert-type scale. As suggested in Salovey and Mayer's theory of emotional intelligence (1990), the instrument has three categories: (a) the appraisal and expression of emotion assessed by 13 items; (b) the regulation of emotion assessed by 10 items; and (c) the utilisation of emotion assessed by 10 items. Participants read each statement and decide whether they 'strongly disagree', 'disagree', are 'undecided', 'agree', or 'strongly agree' with the statement.

Schutte et al. (1998) reported a Cronbach alpha (α) of 0.90 for the internal consistency for adults with mean age of 29.3 ($S.D. = 10.2$) and $\alpha = 0.78$ for test-retest reliability after a two-week interval on the scale for a smaller group drawn from the sample. Schutte et al. (1998) reported predicted validity of $r(63) = 0.32$ for first year GPA of college students, for discriminant validity they reported $r(41) = -0.06$ for the correlation between the scale and SAT scores, and $r(22) = -0.28$ to 0.54 for subscales of NEO Personality Inventory of scores of college students.

Procedure

The *Emotional Intelligence Scale* was translated into Turkish. Since Schutte et al. (1998) allowed the free use of the instrument for research purposes, special permission was not sought. The Turkish version was developed through the process of translation and back translation. Besides the researchers, the translation process was checked by two faculty members who specialised in the Turkish language and had an advanced level of English. When a discrepancy occurred between the colleagues, the researchers considered the comments of the majority of the members and decided on the final wording.

The participants initially completed a demographic survey that recorded their gender, age, and job experience. Later, they completed the Turkish version of the *Emotional Intelligence Scale*. In

order to ensure cooperation of the participants and motivate them, the participants were told that the findings would be used only for research purposes and all information regarding their identity would be kept confidential.

RESULTS

Reliability

In order to examine the internal consistency of the 33 item scale, the Cronbach alpha (α) was found to be 0.88, which is acceptably high and close to what Schutte et al. (1998) found ($\alpha = 0.90$).

The Confirmatory Stage

Three negatively scored items in the *Emotional Intelligence Scale* were re-written in order to score all items in the same direction. Then the analysis was undertaken with a confirmatory factor analysis with maximum likelihood estimation to test the fit of the one factor model to the data. The analysis was run through SPSS version 10.0. The analysis was carried out using raw-score data collected from the 33-item scale. Data were collected on a five-point Likert-type scale and was treated as continuous. The model explained 22.8 per cent of the total variance. The internal consistency for the scale was high ($\alpha = 0.88$). In terms of factor loadings, only item 28 had a loading less than 0.30 (0.25). Furthermore, except for items 8 and 28, all items had loadings higher than 0.40. An examination of the scree plot suggested a one-factor solution and supported Schutte et al.'s (1998) model. Therefore, we decided on the one factor maximum likelihood solution, as it was more understandable, clearer and suggested by the scree plot. Figure 1 showed the scree plot of eigenvalues for these factors. The one factor estimation also seemed to fit the data better.

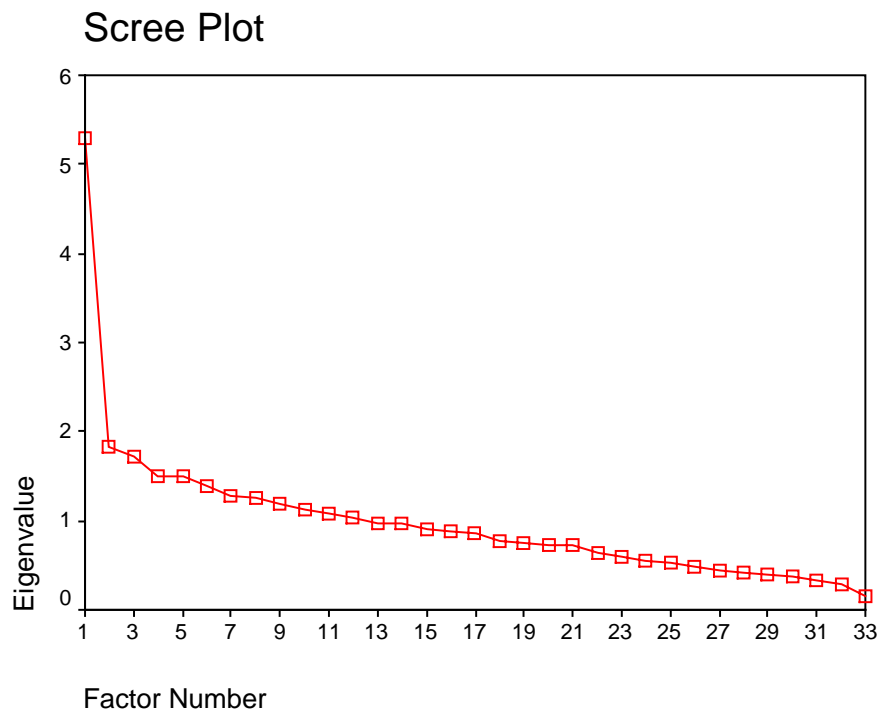


Figure 1. Scree plot of the emotional intelligence scores

The Exploratory Stage

Exploratory factor analysis with principal components estimation and varimax rotation was applied. The analysis revealed 10 factors with eigenvalues greater than unity. However, after extracting the first factor, the percentage of variance and the eigenvalues dropped dramatically (the per cent of variance explained dropped from 22.8 to 5.6 and the eigenvalue estimation from 7.52 to 1.85 from first to second factor).

Since the test of global fit was not significant, the ten-factor solution to the scale was rejected. In order to test the fit of other models and to check agreement between the present data and the findings of Petrides and Furnham (2000) and Saklofske et al. (2003), a two factor solution, followed by three and four factor models, were examined. Principal components extraction with varimax rotation was applied to the analysis of each model.

When the two-factor model was examined, the variance explained increased from 22.8 to 28.4. Internal consistency for item loading of the one factor and two factor models were calculated. Internal consistency for items in the one factor one was $\alpha = 0.86$ ($n = 23$, items 1, 9, 2, 18, 15, 23, 25, 16, 22, 17, 8, 21, 26, 20, 19, 5, 6, 3, 12, 31, 24, 29) whereas there was an α of $=0.71$ ($n = 10$, items 27, 32, 30, 28, 33, 13, 14, 7, 4, 11) for items in two factor model. On the other hand, when the items were checked in terms of their meaning, there was no meaningful grouping among items that occurred in each factor.

A three-factor solution was also undertaken. The variance explained increased from 28.4 to 33.8 per cent with three-factor solution. Internal consistency for items in factor one was an α of $= 0.82$ ($n = 15$: items 24, 23, 3, 2, 22, 15, 5, 1, 21, 28, 20, 12, 26, 31, 6) whereas the α was $=0.72$ ($n = 8$, items 16, 9, 18, 8, 29, 17, 19, 25) for items in factor two, and $\alpha = 0.71$ ($n = 9$, items 27, 32, 13, 7, 30, 14, 11, 33, 4) for items in factor three. However, there was still no meaningful grouping among items which formed each factor.

Finally, a four-factor extraction was run. In this model, the variance explained increased to 38.6 per cent. Internal consistency for items in factor one was an α of $= 0.82$ ($n = 16$, items 9, 18, 8, 25, 1, 16, 19, 5, 11, 26, 29, 17, 4, 20, 6, 10) whereas there was an α of $=0.78$ ($n = 9$, items 23, 22, 12, 21, 24, 2, 3, 1, 3, 15) for items in factor two, an α of $=0.65$ ($n = 5$, items 13, 27, 32, 7, 14) for those in factor three and there was an α of $=0.55$ ($n = 3$, items 33, 28, 30) for items in factor four. As in the previous models, items that formed each factor did not establish a meaningful grouping.

Consequently, although exploratory factor analysis indicated the possibility of a ten-factor model, the test of global fit revealed a non-significant fit and the scree test suggested a one-factor model. Two, three and four factor models were also applied. However, items that loaded on each factor failed to establish meaningful groups and there was no reasonable discrepancy between the groups in either of two, three and four factor models.

Emotional Intelligence and Individual Differences

In the second part of this paper, scores of the Turkish educators were investigated in terms of their gender, age, and job experience. Table 1 presents the demographic data obtained from the sample.

The effects of gender, age and job experience on emotional intelligence scores were investigated through univariate analysis of variance. The model did not reveal significant results ($F = 0.454$, $p = 0.996$). Contrary to expectation, the results indicated a non-significant gender effect on the scores ($F = 0.113$, $p = 0.737$), suggesting that gender was not a determining factor for emotional intelligence in the Turkish adult educators sampled. The mean for males was 76.76 ($n = 122$) and for females 71.54 ($n = 45$).

Age was also found to be non-significant in its effect on the scores of the individuals ($F = 0.588$, $p = 0.739$). It appeared that scores based on the age of the participants did not differ.

Similarly, job experience did not have a significant relationship with emotional intelligence scores ($F = 0.313$, $p = 0.929$). Therefore, emotional intelligence scores did not increase as the job experience of the individuals increased.

Table 1. Participants' demographic information

Variables	n	\bar{X}	S.D.
Gender			
Female	45	76.76	18.43
Male	122	71.54	29.98
Missing	2		
Age			
20-25	26	76.33	24.79
26-30	28	73.64	10.24
31-35	45	74.31	40.91
36-40	33	70.81	24.75
41-45	24	74.75	16.59
46-50	18	64.83	20.86
51 and over	2	65.50	4.95
Missing	1		
Years of experience			
1-5	48	77.27	14.02
6-10	41	71.00	21.52
11-15	24	71.05	16.06
16-20	16	79.17	53.62
21-25	25	70.50	34.72
26-30	6	72.80	15.47
31 and over	2	68.00	16.52
Missing	15	68.00	1.41

DISCUSSION

The result of exploratory and confirmatory factor analysis of the Turkish version of the *Emotional Intelligence Scale* indicates an agreement with Schutte et al.'s (1998) findings, although the total variance explained by the model is not large. In other words, the fit of data to Turkish adults suggests a single factor model. On the other hand, the scale may also be applied to other samples to test fit of the one factor model to the scale. This would also provide a better understanding of the validity of the trait. The Turkish version of the *Emotional Intelligence Scale* has also revealed a satisfactory level of internal consistency.

Contrary to previous research, scale scores of the individuals do not differ with respect to gender. One possible reason for this non-significant difference may be that the number of the males in the sample was almost three times greater than the number of the females. Moreover, culture may be another reason for such similarity. It is known that when it comes to psychological properties, culture may lead to gender differences. Differences that occur between males and females in one culture do not necessarily mean that such differences also occur in other cultures (Cakan, 2003). The gender differences that have been observed in emotional intelligence in previous studies result from studies conducted on individuals who live in Western cultures (Saklofske et al., 2003; Schutte et al., 1998).

Similar non-significant differences have been revealed for individuals of different ages and job experience. Therefore, the emotional intelligence of the individuals does not appear to increase as their age and job experience increase.

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Janshala in Jharkhand: An experiment with community involvement in education

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Education has been identified as one of the primary agents of transformation towards development. However, low level of literacy and education is one of the major challenges facing most of the underdeveloped countries. Active community involvement and participation has emerged as an effective mechanism in improving the sustainable level of education in many of these countries. This paper analyses the crucial aspects of community participation in education and supports its importance by reviewing the basic framework and outcome of Janshala – a Government of India-UN program in Jharkhand, India. Though community participation is not a panacea for addressing all barriers, the Janshala experience in Jharkhand and cross country experiences involving community in educational programs indicate that the active involvement of the community has facilitated in identifying community specific education issues and formulating effective strategies to address those barriers by mobilising resources within the community.

Education, development, community, participation, Janshala, India

INTRODUCTION

Education increases the capacity of people to realise their vision of society into operational realities, enabling them to become self-motivating agents of social change, serving the best interests of the community. Improved access to primary education yields tangible benefits by developing the skills of the people, it expands livelihood opportunities and increases their earning potential and thus helps in tackling the problem of poverty. Awareness and empowerment brought about by education encourages public participation in decision-making and solves the problem of degradation of the environment, improves nutrition, reduces birth rates, and improves health and living conditions in the society. For this reason education is considered the primary agent of transformation towards sustainable development.

One of the major challenges facing most underdeveloped countries is the low level of literacy and education. In the year 2000, developing countries – mostly in South Asia and Sub-Saharan Africa – accounted for 94 per cent of the total 104 million out of school children (school-age children who were not getting the basic education), of which 57 per cent were girls (World Bank, 2004). Government initiated programs in these countries have often been found not to be very successful in enhancing education levels. Lack of resources and management deficiencies have been the major impediments for the governments in providing the community with adequate educational delivery, fully equipped school buildings, teachers and instructional materials.

On the other hand, experiences of countries that have sought active community participation in implementing education programs have met with considerable success in achieving sustainable improvement in educational levels. Community participation has been recognised as an important

and significant strategy for an efficient and effective utilisation of limited resources in order to identify and solve problems in the education sector and to provide quality education for children.

The first section of this paper looks into the crucial aspects and the role of community participation in education and supports its importance by reviewing the basic framework and outcome of the Janshala program in Jharkhand, India.

Section 2 emphasises the importance of education for sustainable development. Narrating the cross-country experiences it also elucidates the effectiveness of community participation in achieving the goal of universal primary education. Janshala experience of community involvement in education as a supportive mechanism for improving the education level is discussed in Section 3. Section 4 concludes by summarising the main findings of the paper.

EDUCATION AND COMMUNITY PARTICIPATION

Education and Development

Considering that education is dynamically interrelated to every aspect of social and economic development [the economic benefits of education (higher wages, better productivity, use of technology); the impact of education on population (growth, health, and social well-being); and the relationship between education and democratic society (participation in policy issues and decision making processes)], it should therefore occupy the topmost importance in all community development programs and activities (See Figure 1 and Box 1).

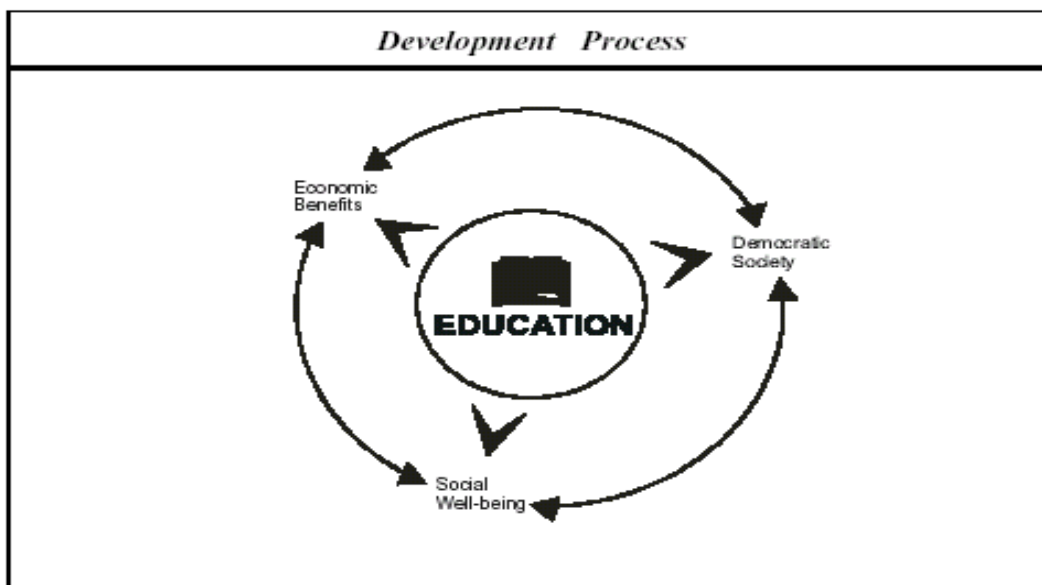


Figure 1. Development process

Source: Basic Education Coalition (2004)

Community Participation for Universal Education

Historically, traditional development efforts and welfare programs aimed at improving the socio-economic conditions of the poor and the marginalised section of society were supply driven, centrally planned and initiated, designed and implemented according to set standards from the top-down, by agencies and institutions, without systematic consultation and involvement of the intended beneficiaries. As a result many programs have been unsuccessful, and services rejected or under-utilised, because they failed to address the people's needs, cater to or respond to local conditions.

In recent times community participation has been perceived as a key mechanism to promote sustainable development. The aim is to encourage people to take decisions themselves, to become agents, rather than being treated as ‘target groups’ or passive recipients of benefits. It is now recognised that programmatic interventions and initiatives have more chance of succeeding if their costs and services are tailored to local conditions and the user’s demand. A community’s need and expectation for quality service has become a central feature of a demand responsive approach.

Box 1: Education and development

Education and Economic Growth

No country has reached sustained economic growth without attaining near universal basic education.

Economic research has found that one year of additional education increases individual output by 4–7 per cent, and countries that improve literacy rates by 20–30 per cent have seen increases in Gross Domestic Product (GDP) of 8–16 per cent.

Heavy investment in primary education and tight management of that investment are the most important factors in the difference between the economic boom in East Asia and the slow growth of sub-Saharan Africa.

A farmer with just four years of basic education is, on an average, 8.7 per cent more productive than a farmer with no education.

Basic education helps in combating the problem of child labour.

Education, Health and Quality of Life

Educated people live longer. Multi-country research has demonstrated that the education of children—particularly girls—is related to lower death rates. Ten per cent rise in primary enrolment rates is associated with an average 10.8-month increase in life expectancy.

Educated women have greater control over their own reproductive lives. They have healthier pregnancies, provide better health care for themselves and their families, and are more aware of preventive measures such as vaccinations. They are able to raise healthier and nourished families. As girls’ enrolment rates increase and child survival rates improve, family size decreases.

Children of mothers with no education are more than twice as likely to die or to be malnourished than children of mothers who have secondary education or higher.

Education, Political Stability, Democracy and Tolerance

Studies by the World Bank and Freedom House have found that countries with higher levels of education have greater political stability and stronger democratic rights.

Source: Compiled from Basic Education Coalition (2004).

That community participation has a key role in sustainable development can be ascertained from the fact that many bilateral and multilateral organisations (such as ADB, DFID, UNDP, USAID and World Bank) and various forums and meetings (such as The World Declaration on Education for All and The World Education Forum) have emphasised it as one of the key strategies to address the challenges faced by the marginalised and disadvantage section of a society.

Realising the importance of community participation in education, the relationship between the two has been articulated in many research studies by devising models, strategies and forms through which a community can be effectively involved in the education process. Williams (1994) has identified three models relating education and community as follows:

- **Traditional community-based education:** In this model, government plays a minor role. Education is deeply embedded in local social norms. Communities provide younger generation of people with education based on local norms/ customs and economic skills.
- **Government-provided education:** In this model, communities have a negligible role. Governments have the key responsibility for providing, regulating and standardising education.

- Collaborative model: Community plays a supportive role in government provision of education.

Colletta and Perkins (1995) describe various forms of community participation which include (a) research and data collection, (b) dialogue with policymakers, (c) school management, (d) curriculum design, (e) development of learning materials, and (f) school construction.

Coppola, Luczak, and Stephenson (2003) have also pointed out that community participation can be in the form of financial, material, and labour – varying from sending children to school and attending meetings, helping in school construction, managing schools and paying teachers' salaries. Community ownership and commitment helps in making the program more substantial and sustainable so that it becomes a support and enabling system for community self-help.

Thus, community participation in education is being envisaged as an efficient strategy to achieve many objectives, including increasing the relevance and quality of education, improving access and coverage, identifying problems reflecting local priorities and developing relevant curriculum and learning materials, improving ownership, local accountability and responsiveness, ensuring sustainability, reaching disadvantaged groups, mobilising additional resources and building institutional capacity. The support of all segments of the community helps in achieving quality educational outcomes.

Country Experiences with Community Participation in Education

Various cross country experiences – Ghana (Agarwal and Hartwell, 1998), Malawi (World Bank, 1995), Nepal (UNDP, 2003), Indonesia (Dwyer, 2004), Pakistan (Anzar, 1999), Uganda (UNDP-OHCHR, 2004), and many others – have indicated that community participation and the management of education projects and activities, have helped in addressing the barriers that impede the process of achieving universal primary education.

Obstacles in education

Some of the obstacles in education are detailed below:

- **Lack of infrastructure:** A major obstacle to achieving the goal of universal primary education is inadequate educational infrastructure and services due to the lack of resources with the government both in terms of material and manpower. There is a shortage of teachers and schools; some remote areas either have no schools at all or if the schools do exist then poor roads and lack of transportation make them inaccessible. The condition of most of the schools is pathetic. Either they are being run from dilapidated structures or at some places there is no structure or shelter for children and they even lack basic amenities such as blackboard, chalk, chairs, desks or floor mats, and clean drinking water.
- **Functional deficiency:** There is an acute shortage of trained and qualified teachers and high absenteeism among teachers further worsens the situation. The classroom environment is not very conducive for studies as the student-teacher ratio is very high, resulting in overcrowded and congested classrooms. Parents view the formal education structure as irrelevant for their children's future because the school curriculum is not framed in terms of the local environment and culture; teaching processes are based on rote memorisation rather than being activity based.
- **Ignorance:** Uneducated parents are ignorant of the long-term benefits of educating the children in enhancing the economic condition, improving health status and the overall welfare of the family. Parents have a lackadaisical attitude towards education, as they are not aware of the value and relevance of education to their lives.

- **Poor socio-economic conditions:** Poverty is a major constraint to educational access. It is impossible for marginalised households to make investment in education in the form of school fees, costs of books, uniforms, meals and transportation. Most of the children from poor families contribute to family income either directly by working as labour or indirectly by contributing in doing household chores. Parents feel the opportunity cost of education – in the form of a child's foregone earnings and on-the-job work experience – is high and this prevents them from sending their children to school. Malnourishment, poor health conditions are also significant factors contributing to low enrolment.
- **Gender discrimination:** There are many socio-cultural and economic barriers that impose restrictions on a girl child to attend school. Parents view a girl child as a liability and see limited economic benefits in educating her, for girls after marriage leave the family whereas a male child is considered to contribute financially to family income in future and support the parents as they grow old. Girls in traditional societies are entrusted with household chores and thus have to shoulder responsibilities like looking after younger siblings, cooking, cleaning and fetching water. Issues of safety and security due to the fear of a growing menace of sexual harassment and exploitation deter the parents from sending a girl child to school. Lack of female teachers is an important reason for girl students to drop out; parents are more willing to send their daughters to school if there are women teachers.

Community participation in overcoming obstacles

Community participation has proved to be an effective approach in addressing the above identified socio-economic and cultural barriers by defining program initiatives for local conditions, framing and designing relevant, realistic, and flexible curricula catering to the area specific socio-economic needs, thus enabling the children to fulfil their responsibilities (economic and household) and simultaneously study (see Box 2).

Box 2. Program intervention designed to local needs

The Alternative Basic Education for Karamoja (ABEK) in Uganda - a non-formal learning program - was formulated in close consultation with local communities as per the requirements of the pastoral lifestyle. The program has been successful in bringing the children into the education fold by closing the gap between the formal system and the semi-nomadic lifestyle by evolving a system of flexible time-table which allows the children to do their household chores, curriculum has been formulated for the local context, facilitators have been selected from within the community to take classes.

The Karimojong community (pastoral and semi nomads) had earlier rejected the formal education system, first because the children had to do household chores and, second, because education was looked upon as not being relevant to the survival needs of the community.

Local communities have also helped to fill gaps where governments are unable to provide education services by efficient use of limited resources, and making a substantial contribution in improving education quality and access by developing infrastructural facilities – that is building proper classrooms and toilets, providing furniture, textbooks and blackboard, and establishing new schools and constructing approach roads to school thereby providing easy access to schools for beneficiaries of unserved areas (see Box 3).

Institutionalisation of local groups and committees has increased efficiency, accountability and responsiveness (see Box 4). Women representation in these groups and involvement in decision-making has been very significant in bridging the gender gap in school enrolment by acknowledging and addressing the issues pertinent to girl child education.

Box 3. Infrastructure development through community participation

World Bank aided primary education program (1995) in Malawi sought active community participation in constructing primary classrooms and associated infrastructure. The community was mobilised through orientation workshops and, once the government had identified the area for the school, thereafter it was the responsibility of the community to select the site and complete its construction. Thus, by evoking a sense of ownership among community members the basic infrastructure was developed in an efficient manner.

Box 4. An initiative to provide equal opportunity for girls in education

COPE (Community Owned Primary Education) a UNDP funded primary education program in Nepal through active community participation has been able to provide equal opportunity for girls in education who would have otherwise been left home to look after younger siblings or to do household chores. Of the nearly 9,000 students enrolled in 120 COPE schools, 52 per cent are girls, with 63 per cent belonging to the disadvantaged groups. All the COPE schools have been built by mobilising the local resources and are being managed and monitored by local community members and local governing bodies.

Thus to make a substantial inroad towards attaining the goal of universal primary education it is imperative that all interventions should have community participation as a core strategy. In order to ensure universal education and sustainable improvement in the quality of education it is necessary to bring the community closer to the school system.

COMMUNITY PARTICIPATION AND THE JANSHALA PROGRAM¹

Background

The Janshala Program is a collaborative effort of the Government of India and five UN agencies – UNDP, UNICEF, UNESCO, ILO and UNFPA – to provide program support for the ongoing efforts towards achieving Universal Elementary Education in India. The term *Janshala* consists of two components i.e. '*Jan*' (refers to the word 'Community') and '*Shala*' (refers to the word 'School'). The combination of these two words refers to the 'Community School'. The total area covered under the program is 139 blocks spread over nine states – Andhra Pradesh, Jharkhand, Chhattisgarh, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and Uttar Pradesh. The main objectives are:

- to enhance and sustain community participation in effective school management and the protection of child rights;
- to improve performance of teachers in the use of interactive, child centred and gender sensitive methods of teaching in multi-grade classrooms; and
- to improve attendance and performance of 'difficult- to- reach' groups of children, especially girls among them.

Janshala in Jharkhand

The poor literacy and education scenario characterises Jharkhand, the 28th state of the Indian Union, which came into existence after the bifurcation of Bihar in November, 2000. From the census in 2001, the literacy rate of the state is as low as 54.1 per cent against the national average of 65.4 per cent. The literacy rate among women and tribal groups is even lower. The drop out rate particularly among girls and tribal students is very high. Given that the state has a low level of literacy (Table 1), especially among the women and tribal peoples, and a low level of economic

¹ To assess the effectiveness of the Janshala program in attaining its objectives, the external evaluation study of the program in Jharkhand was carried out by the authors on behalf of XLRI. The findings reported here are based on this study.

and social development, it constantly requires intensive interventions and support from the government and various organisations working for social causes.

Table 1. Literacy rates in Jharkhand

Gender	%
Total	54.13
Male	67.94
Female	39.38

Source: Compiled from Provisional Population Totals: *Census of India 2001*

The Janshala Program aims at easing the constraint of illiteracy, with a focus on children of the age group 6 to 14 years, especially girls, child labour, children of socially and economically depressed classes (Schedule Caste (SC) and Schedule Tribe (ST)), minorities, disabled children and children from remote sparsely populated areas. The Program has been implemented in 12 blocks of Giridih district and eight blocks of Deogarh district in Jharkhand. The blocks have been selected on the basis of different indicators such as low female literacy, incidence of child labour, and concentration of ST and SC population.

Community Participation: A Basic Framework

Community participation and empowerment have been identified as the core elements of the Janshala program. One of the biggest challenges facing Janshala functionaries in Jharkhand was to bring the community closer to schools. For this a three-prong strategy (see Figure 2) has been adopted, which consists of formulating institutions, carrying out activities and community awakening drives.

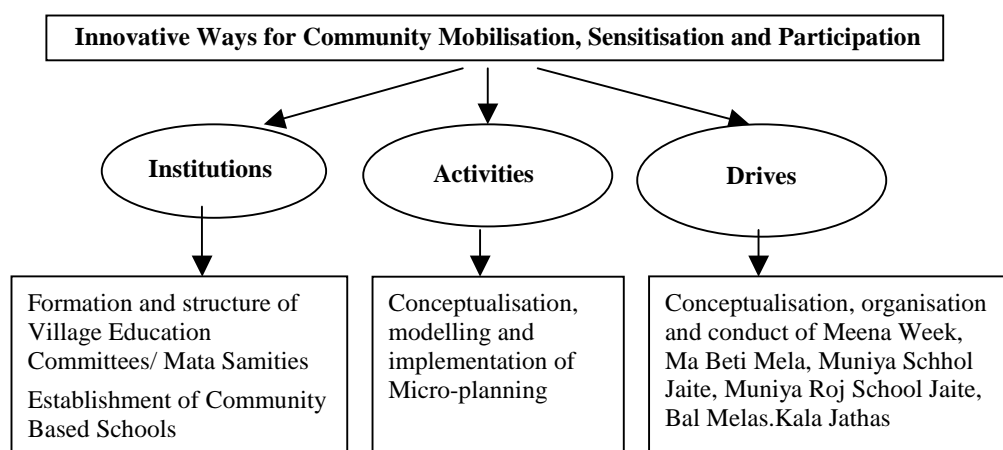


Figure 2. Basic strategic framework for the Janshala Program

Source: XLRI (2004)

Activities for community mobilisation and sensitisation

A comprehensive micro planning process was evolved whereby identified NGOs, parents, teachers, *anganwadi* workers, animators and other community members actively participated. The aim of the micro planning exercise was to assess the socio-economic conditions, educational scenario in respect to current enrolment and non-enrolment status, community attitudes towards education and the existing educational facilities in the area. Thus it is possible to develop and formulate an exhaustive village education plan focusing on effective ways for community participation and mobilisation in school management, teachers' empowerment and education of the underprivileged and other marginalised groups, especially girl children.

Institutionalisation of community participation: Ownership and sustainability

For effective, enthusiastic and sustainable involvement of the local people in school-related activities it is imperative to strengthen the capacities of schools and communities so that they manage their own affairs and ensure complete basic education for all children.

Therefore community participation has been institutionalised by setting up committees such as the Village Education Committee (VEC), Panchayat Education Committee (PEC), Block Education Committee (BEC), Parent Teacher Association (PTA), *Mata Samities* (MS: Mothers' Group), Self Help Groups (SHG), and *Prerak Siksha Samities* (PSS: motivating groups) (see Box 5).

Box 5. Mata Samities: An innovation to involve women in education

Formation of Mata Samities (mothers' group), an all women's group, is a significant achievement of Janshala towards the empowerment of women by involving them actively in the program interventions. These groups have been entrusted with the responsibility of managing and running the Community Based Schools and have proved to be effective in addressing the problem of gender discrimination.

Emphasis has been on giving due representation to all sections of the society in these community groups. For effective and efficient management of schools and to evolve and develop a feeling of ownership towards building up a sustainable educational system, the Janshala program has emphasised the training, strengthening and empowering of the community groups and community members on various aspects of school functioning, management, maintenance, monitoring and other issues regarding education. Empowered with training, these community groups are actively working on school improvement, enrolment and retention of children in primary schools and alternative schools by regularly visiting the schools for overall inspection, and also to ensure that both teachers and students attend school regularly. They also help in bringing out-of-school children to the school as well as track down absentees, improve access by setting up Community Based Schools (CBS) and alternate schools. In addition to this, they promote gender equity by ensuring that girls get the opportunity to go to school, evolving an integrated and holistic social development approach, which converges educational and developmental activities and resource inputs by all agencies and ministries, as well as supporting initiatives for the marginalised groups and children with special needs.

Drives for community sensitisation, support and participation

Systematic and specific drives and campaigns such as *Bal Melas*, Sit and Draw competitions, exhibitions and performance by *Kala Jathas* were organised for sensitising the community and increasing their awareness about the importance of education and thereby developing responsive attitudes among community members for active support and participation.

In order to address existing discrimination against the girl child in her access to educational facilities, and generate awareness on issues like girl child enrolment and her rights, Janshala functionaries conceptualised innovative approaches and methods such as *Meena Week*, *Ma Beti Mela*, *Muniya School Jaite*, *Muniya Roj School Jaite* (see Box 6).

Box 6. Drives for enrolment of girls

“*Nuniya school jate*” (girl goes to school) and “*Nuniya school roj jate*” (girl goes to school everyday) have been two very successful enrolment drives addressing the issue of girl child education and the drop-out girls respectively. The members of community groups-VEC, MS in Deoghar district along with Janshala functionaries indigenously developed these motivational drives to generate awareness among the community members

Assessment of the Janshala Program

Effective implementation of the above mentioned programmatic interventions have facilitated the process of evolving the ignorant and backward communities into realising the importance of education, empowerment, ownership and self sufficiency in developing their capabilities and skills, improving their livelihoods and increasing their earning potential.

Methodology and data base

General methodology

The assessment of the Janshala program by the external evaluation study team was done through extensive sample survey. In order to make a detailed qualitative and quantitative assessment, both exploratory research methods (Focus Group Discussions), participant interviews and observations and conclusive research methods (secondary data analysis and survey research using questionnaires) were used.

Sampling method and sample size

One block each, of the first phase blocks, from both the Janshala districts (Mohanpur from Deoghar district and Bengabad from Giridih district) were identified for the purpose of evaluation. A method of stratified random sampling was used for selecting 15 villages from each of the identified blocks to make a detailed assessment. From each sample village, a community group, namely, VEC or MS was selected. The study proposed to select two schools from each village. However in most of the villages there was only one school. From each identified school the study had proposed three teachers but it was observed that in most of the villages there was only one teacher handling all the classes. Five students (3 girls and 2 boys representing different sections of the society – SC, ST, OBC and Minorities) from each identified school were considered for the interview. Two parents (1 male and 1 female) of the students from the identified schools from each village were contacted for obtaining the requisite data. The matrix of the actual sample size is presented in Table 2.

Table 2. Matrix of actual sample size for at the village level units in two districts

Units	Giridih	Deoghar	Units	Giridih	Deoghar
Total Schools	17	15	Total Students	85	74
- Government	9	11	- Male	37	35
- Non Government	8	4	- Female	48	39
Total Teachers	27	32	- SC	27	15
- Male	23	27	- ST	7	14
- Female	4	5	- OBC	26	28
Total Community Groups	15	15	- Minorities	17	14
- VEC	10	13	- General	8	3
- MS	5	2			
Total Parents	34	30			
- Male	19	15			
- Female	15	15			

Source: XLRI (2004)

Along with the units at the village level the study team also visited and interviewed state, district and block level officials, surveyed Block Resource Centres (BRCs) and Cluster Resource Centres (CRC) and interacted with the BRC and CRC co-ordinators.

Data collection, instrumentation and analysis plan

The Matrix of Observation, Analysis and Tabulation was prepared that captured indicators, sub-indicators and the data sources.

In total, 15 different questionnaire forms were prepared for collecting the data from the Janshala functionaries and the beneficiaries at the state, district, block and village level (see Box 7).

The achievement and the impact of the program was assessed carrying out tabular and cross sectional analysis. The strengths and weaknesses of each aspect, activity and institution of Janshala were evaluated through SWOT analysis.

Box 7. Schedules for collecting information

	Quantitative Data	Qualitative/ Descriptive Data
State	(2) State Profile	State Level Interview
District	(1) District Profile	
Block	(4) Block Profile BRC / CRC Profile	Block Level Interview Interview of BRC / CRC Coordinators
Village	(8) Village Profile VEC/ MS Profile School Profile	FGD with Community Members FGD with VEC / MS Members Interview of Teachers Interview of Parents Interview of Students

(Number of Formats prepared at each level is indicated in the parenthesis)

Source: XLRI (2004)

Impact of Janshala program: Some findings

Janshala program interventions had extensive coverage and wide impact. However, since the focus of this paper is on the role of community participation, the findings presented below are focused on this aspect. These findings highlight the impact of community sensitisation, mobilisation and active participation on access to school and enrolment.

Extent of involvement of community

The positive attitudinal change of the community towards reconstructing the social fabric by becoming more proactive is reflected in the following ways:

- Community members have provided support in the form of “physical labour” (such as cleaning the schools, constructing approach roads to the schools, painting the schools, furniture repairing); in the form of donation (such as stationary, construction material, sports equipment); and services (in the form of teaching by some educated youth).
- There is lot of enthusiasm among the community members to participate actively in the community groups such as VEC, PEC, PSS, PTA, MS and SHG. This can be assessed from the data that nearly 78 per cent of the community members regularly attended the meetings.

Members of VEC and MS are actively involved in monitoring the enrolment, attendance and performance of children in schools and also in tracking and bringing back the drop out children into the mainstream education system.

- Proactive participation of the community in education is reflected in the very low percentage of parents with drop out children (0% in Deoghar and 15% in Giridih), and a very high percentage of parents sending their children regularly to class (around 90%), attending extra curricular activities and interacting with teachers on issues like attendance and performance (approximately 90%). Parents take pride in acknowledging that their children go to school. Nearly 98 per cent of the parents encourage their children to join school and nearly 75 per cent of the parents monitor their child’s homework.
- CBS are being efficiently run and managed by the members of the MS.

- Approximately 75 per cent of the VEC/ MS and 85 per cent of the community members have indicated to have approached higher authorities with demand for more schools, teachers and better amenities in schools.

Impact on access to schools

- Children have easy access to schools. CBS and alternative schools have been set up with the support of the community in areas, which had no schooling facility. There has been a significant improvement in the access status of unserved habitations in both the Janshala districts (Table 2). This has been achieved due to the efforts put in by the community for it is they who are responsible for establishing, running and managing these schools.

Table 2. Total number of unserved habitations

	Giridih	Deoghar
As on 1/4/02	1708	1169
As on 31/12/03	122	125

Source: Data as made available by JEPC, Ranchi (April 2004)

Extent of Improvement in School Functioning

- Teachers are now more regular in taking classes. Nearly 70 per cent are actively involved in school management activities like designing and organising school functions, cultural and sports activities, school discipline, account keeping, procurement, maintenance and proper utilisation of Teaching Learning Material (TLM) and other school activities. Active participation of teachers has helped in developing a conducive study environment in schools thereby helping in enrolment and retention of children.
- Functioning of the schools has become more streamlined and systematic. There has been considerable improvement in the maintenance of school records, preparation of timetables and regularisation of examinations.

Impact on Enrolment and Performance

- Community involvement has improved the enrolment level substantially contributing significantly in developing a conducive and supportive environment for promoting education.
- During 2002 to 2003, the gross enrolment ratio (GER) increased for both the age groups, namely 6 to 11 years and 11 to 14 years and the percentage of out of school children declined considerably (See Table 3).

Table 3. Gross enrolment ratios and out of school children (in percentages)

	Age Group 6-11 Years		Age Group 11-14 Years	
	on 31.12.03	on 31.10.02	on 31.12.03	on 31.10.02
<i>Gross Enrolment Ratio</i>				
Deoghar	96.8	92.8	91.4	60.5
Giridih	95.7	82.0	74.7	72.6
Average	96.1	86.2	81.0	68.0
<i>Out of School</i>				
Deoghar	3.2	8.6	7.2	39.5
Giridih	4.3	25.3	18.0	27.4
Average	3.9	19.0	13.8	32.0

Source: External Evaluation Study of Janshala, (2004), XLRI (2004), Jamshedpur

- There has been a substantial increase in the enrolment of girls. Percentage growth rate in girls enrolment for the period 1999-00 to 2003-04 is 113 per cent for Deoghar whereas for Giridih it is 3.6 per cent for the period 1996-97 to 2003-04.

- There has also been a significant percentage increase in the enrolment growth rate of marginalised children during the program period. Of the two Janshala districts, the enrolment figures of marginalised children in Deoghar (SC 120%, ST 169% and OBC 91%) are much higher than Giridih (SC 8%, ST 20% and OBC 8%). Declining trends have been observed for out of school marginalised children in both Deoghar (97%) and Giridih (9%) districts.
- Improvement in school functioning has helped in enhancing the performance of the children. An average improvement of nearly five per cent has been observed in the grades of students of both the districts in language and mathematics during the program period.

Sustainability of Janshala Outcomes

Janshala in its endeavour to enhance capacity for community participation in effective school management has been a very successful experiment. By basing the program initiatives on the concept of a demand responsive approach, namely, putting the community at the centre and tailoring all services and interventions according to users' demand and local conditions, it has been able to address very significantly key issues like improving the motivation and self-esteem of the parents, teachers and other community members. Sensitising them and transforming their attitudes towards education the program has been able to overcome social, cultural and economic barriers that adversely affect the enrolment, attendance and performance of school-age children, especially the girl children.

Though the program outcomes connote a progression towards developing a functional educational system, but financial and technical constraints in terms of poor economic conditions, illiteracy, inexperience, lack of continuous training for teachers, community groups and community members may impair the sustainability of the program processes and outcomes once the program tenure is over. To address these challenges the government needs to play a definitive role by providing key inputs, namely, funding, training and technical expertise on a continuous basis whereas the community should be involved in qualitative aspects of the education programs. Thus for the program to be able to achieve the goal of universal primary education and ensure sustainability, it is essential for the government and other relevant agencies to provide a strong commitment and continuous support through organised and systematic actions.

CONCLUSIONS

The outcomes and experience of many other countries indicate that community involvement and accountability have helped in increasing the efficiency and effectiveness of intervention programs aimed at achieving the goal of universal primary education and also ensuring the sustainability of the activities as beneficiaries assume ownership and are enthusiastic to maintain its momentum. Active involvement of the community has facilitated in identifying community-specific education issues and formulating effective strategies to address those barriers by mobilising resources from within the community.

However, since all these countries are economically backward and ignorance is deep rooted, it is not possible for the communities to be able to sustain the program initiatives on a long-term basis without constant external support and guidance. Community participation is not a panacea for addressing all barriers to achieving universal primary education but it has a potential in making a substantial contribution if there is high-level political commitment and a systematic and goal oriented co-ordination among all the stakeholders. A synergetic government-community partnership is needed to achieve the objective of universalisation of elementary education.

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Vygotsky's philosophy: Constructivism and its criticisms examined

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Criticisms have recently been voiced of constructivism, the leading metaphor of human learning since the 1970s. Inspired by inconsistencies in interpretations of constructivism in current literature, we examine the underlying epistemological beliefs of popular constructivist theories and their criticisms. We find that popular constructivist claims and criticisms, instead of being based on contrasting philosophical ideas, are similarly grounded on the dualist separatism of the human mind and the external world. We then present our interpretation of Vygotsky's historical-dialectical-monist philosophy, through discussions of Vygotskian concepts including social environment of learning, the role of language, and individual consciousness. The paper concludes that confusions about Vygotsky's theory often arise from concepts taken literally and from the lack of appreciation of the general philosophical orientation underpinning his works.

Constructivism, criticisms, Vygotsky's philosophy, historical-dialectical-monism, paradigmatic philosophy

INTRODUCTION

Setting out to overcome the Cartesian mind-body dualism and the well-rehearsed debates between empiricism and rationalism, the constructivist metaphor of cognitive psychology emerged in the 1970s (Gergen, 1985); and since then, has been the buzzword in school education and teacher training in the western part of the world. It has been recognised as both a 'paradigm' as well as a 'theory' (Fosnot, 1996). With the increased attention, many variants emerged and nowadays one may talk of constructivism as a church of theoretical accounts. Most recently, however, criticisms have appeared in the literature challenging constructivism across its church of views (see, for example, Fox, 2001, and Phillips, 1995).

In his article *The Good, The Bad, And The Ugly – The Many Faces Of Constructivism*, Phillips (1995) challenged this dominant church of thinking. As we note criticisms are often of similar or connected natures, our examination will focus on, in Phillips' words, 'the bad and the ugly' aspects of constructivism. In short, Phillips praised constructivism for its emphasis on learners' active participation and the heightened recognition given to the social nature of learning. The bad side of constructivism lies in its tendency towards epistemological relativism (including individual and social community relativism), which seems to be the major challenge that constructivists face (See also Fox, 2001; and Cobb, 1996 for similar criticism). Lastly, the 'quasi-religious or ideological aspect' is identified as the ugly face of constructivism. The irony now appears to be that from the divergence of constructivist views has emerged a dualist position – the very position constructivism came into being to avoid. By arguing for individual or social

construction of knowledge a Cartesian parallelism between individual and social idiosyncrasy has arisen. This is most clearly seen in popular accounts of constructivists and their recent critics.

This paper starts with a brief summary of constructivism and its two main variants as found in the literature – the cognitive/radical and social/realist traditions, followed by an introduction of recent critiques. Then, we question the accuracy of popular secondary presentations of original authors' thoughts, pointing out inconsistencies between interpretations. We attempt to tease out the internal-external separatism as the common ground that popular constructivism and its criticisms are based on. This is followed by an analysis of some key concepts in Vygotsky's theory. Based on that, this paper argues that the philosophical rigour underpinning Vygotsky's works has not been widely recognised in popular literature. We suggest that the **historical-dialectical-monist philosophy** characterising Vygotsky's theory is at odds with the dualist approaches inherent in many popular accounts of constructivism and their criticisms (Robbins, 2001). The paper concludes that confusions about Vygotsky's theory often arise from concepts taken literally and from the lack of appreciation of the general philosophical orientation underpinning his works.

CONSTRUCTIVISM AND CRITICISMS IN CONTEMPORARY LITERATURE

Constructivism emerged as the leading metaphor of human learning by the 1980s and 1990s as interest waned in behaviourist and information-processing perspectives (Mayer, 1996). Vygotsky (1962), among others, criticised the behaviourist approach as being too narrow, specialised, isolated and intrapersonal in standpoint. Likewise, the information-processing approach of the 1960s and 1970s was criticised as being overly reductionist in its analogy of computer and mind (Mayer, 1996). Both approaches failed to reflect either the active role of the learning agent or the influence of the social interactive contexts in everyday educational settings. Their mechanistic underpinning by an orderly, predictable, and controllable view of the universe proved inadequate to capture the active and social characteristics of learners (Phillips, 1995).

The fact that constructivists, of whatever ilk, consensually hold that knowledge is not mechanically acquired, but actively constructed within the constraints and offerings of the learning environment, was commonly regarded as a shift in paradigm in educational psychology. The mechanistic positivist accounts of learners as recipients of hard-wired knowledge were supplanted by accounts of learners as situated, active knowledge constructors. We note that with this shift, human subjectivity, which was excluded by behaviourist and information-processing accounts, has through constructivism returned to the discussion. But what is of great interest is the relation expressed by popular constructivist accounts between the objective and subjective aspects, between the world and mind. For it is upon this point that we examine whether constructivism can fulfil the promise that it once seemed to hold, to overcome the objective and the subjective parallelism; and it is here, we argue, that we will find an important insight of Vygotsky that appears to have been largely overlooked in the literature.

Today, among the espoused variants of constructivism, two are said to figure most prominently: cognitive constructivism, or personal constructivism, or, sometimes, radical constructivism; and social constructivism, or, at times, realist constructivism.

The cognitive/radical constructivism is believed to stem largely from Piaget's work, with followers such as Bruner, Ausubel, and von Glasersfeld. According to current literature, including teacher education textbooks (see, for example, Eggen and Kauchak, 1999; and McInerney and McInerney, 2002), theorists affiliated with this line of thinking focus on the intrapersonal process of individual knowledge construction. They argue that knowledge is not a self-sufficient entity; that knowledge is not directly transmittable from person to person, but rather is individually and idiosyncratically constructed or discovered. Cognitive or radical constructivists consequently

emphasise learner-centred and discovery-oriented learning processes. In the process, social environment and social interaction work merely as stimulus for individual cognitive conflict.

The social or realist constructivist tradition is often said to derive from the work of Vygotsky. Others classified in this category include Kuhn, Greeno, Lave, Simon, and Brown. Varied as these theorists' ideas are, they are popularly held to be proponents of the central role of the social environment in learning. Learners are believed to be enculturated into their learning community and appropriate knowledge, based on their existent understanding, through their interaction with the immediate learning environment. Learning is thus considered to be a largely situation-specific and context-bound activity (Eggen and Kauchak, 1999; McInerney and McInerney, 2002; Woolfolk, 2001).

As mentioned earlier in relation to Phillips' bad side of constructivism, recent critical responses to constructivist learning theories have mostly observed that by emphasising individual or social community construction of learning, the conclusion of individual or community idiosyncrasy is drawn. Personal constructivism argues that the universe is no longer a mind-independent existence and all individuals cannot be expected to have given or uniform cognition. Social constructivism proposes that cross-community transfer of learning cannot and should not be counted on. These claims are suspected to lead to epistemological relativism, where there exists no absolute truth and any truth is as good as other. In recent criticisms of constructivism, Piaget and Von Glasersfeld are commented as advocating for individual epistemological idiosyncrasy, and Kuhn and Vygotsky social epistemological relativism.

The other main criticism of constructivism, the ugly face of it as Phillips put it, is its quasi-religious or ideological aspect:

Across the broad fields of educational theory and research, constructivism has become something akin to a secular religion. ... constructivism, which is, whatever else it may be, a "powerful folktale" about the origins of human knowledge. As in all living religions, constructivism has many sects – each of which harbours some distrust of its rivals. This descent into sectarianism, and the accompanying growth in distrust of nonbelievers, is probably the fate of all large-scale movements inspired by interesting ideas; and it is the ideological or ugly side of the present scene, which is reflected in my article's title. (Phillips 1995, p.5)

This is a very speculative challenge. Nevertheless, elsewhere in the article, Phillips (1995, p.11) commented "Constructivism also deserves praise for bringing epistemological issues to the fore in the discussion of learning and the curriculum". In our view this quasi-religious or ideological aspect of constructivism is closely linked to the ambition of prescribing it as **the** human epistemology. It is exactly because of the ambition of constructivism to prescribe the so-called 'truth' about human epistemology and about the universe as the object of knowing, that it has become an exclusive church of thinking.

The ugliness of constructivism in becoming an exclusive religion of human epistemology does not lie solely within its claim of becoming a paradigm; many constructivists harbour important socio-political and educational concerns (Phillips, 1995):

... all of them [constructivist theorists] also have important educational or social concerns, each of which has a degree of credibility that is independent of the fate of the respective epistemologies.

... One result of all this is to highlight the need for individual attention to students, and the need to give guidance about how bodies of understanding are built up. *It could be*

argued here that a weak or at least a controversial epistemology has become the basis for a strong pedagogic policy. (Phillips, 1995, pp.10-11, italics original)

Terhart (2003) contends, and we agree, that constructivism does not present a new didactic paradigm different from traditional educational theories. Although successful in practical teaching recommendations in some educational areas, constructivism does not introduce a shift from the traditional dualist framework of thinking. A paradigm shift requires a deeper level of correction.

Fox (2001) observed that in its emphasis on learners' active participation, it is often seen that constructivism too easily dismisses the roles of passive perception, memorisation, and all the mechanical learning methods in traditional didactic lecturing. Other researchers (Biggs, 1998; Jin and Cortazzi, 1998) have noted that while constructivist teaching approaches, including one-to-one or small group classroom interaction, do not always guarantee teaching effectiveness, traditional didactic lecturing in large classes of 50 to 70 students in China has not always meant the doom of teaching efforts. In summary, in the behaviourist and constructivist oscillating emphases on the objective and the subjective, the world and the mind, we find not two but one singular theoretical paradigm, that of dualism. Popular literature on constructivism and its critical comments has tended to apply a dualist framework incongruent to the monist philosophy guiding Vygotsky's writings.

CARTESIAN DUALISM: COMMON GROUND OF CONSTRUCTIVISM AND ITS CRITICISMS

In the recent criticisms of constructivism, although some were voiced with greater depth of understanding than others, all took the step of categorising the plethora of constructivist variants. As is always the danger when categorising, one risks an oversimplification and loss of meaning. In *Constructivism Examined*, Fox (2001) applied his analysis through seven short statements, which he argued typified the range of constructivist positions. These statements may form a useful practical synopsis but are hardly a fair target for critique compared to the body of work from which they were derived (see Kivinen and Ristelä, 2003 for a similar assessment). Likewise, Phillips (1995), after a perceptive introduction to the variants of constructivism, locates numerous thinkers within the school of thinking by the standard of 'human the inventor' against 'nature the creator'. But again this orientation device is unfortunately used to evaluate the veracity of differently located thinkers. Such generalisation of complex bodies of work must suffer significant loss of meaning when categorised and so compromise their use for comparative analysis.

Evidence for the consequences of such generalisation may be found in the spate of recent articles, which now find the need to revise the strong distinction so many had drawn between Piaget and Vygotsky. For example in *Beyond the Individual-Social Antimony in Discussions of Piaget and Vygotsky*, Cole and Wertsch (2004) point to Piaget's equal valuing of the individual and the social:

... there is no longer any need to choose between the primacy of the social or that of the intellect: collective intellect is the social equilibrium resulting from the interplay of the operations that enter into all cooperation. (Piaget, 1970, p. 114; cited in Cole and Wertsch, 2004)

We argue that the polarisation of Piaget and Vygotsky along the individual and social is at least in part due to the dualist thought that lies implicit within so much of constructivist writing.

Kuhn too was often similarly polarised as a social community relativist. In his defence he rejected the school of radical sociology of knowledge, where intellectual and social systems are distinguished from each other and the former is regarded as an effect of the latter. He declared that

"I am among those who have found the claims of the strong program absurd: an example of deconstruction gone mad" (Kuhn, 1992, p.9; cited in Phillips, 1995, p.10).

It is curious that some critics, despite their awareness of others being overly reductionist, seem to have repeated this error themselves. Fox, for example, articulated dissatisfaction about constructivists' attack on the so-called 'straw-man' version of behaviourism and yet created his own 'straw-man' of constructivism. The cause of this phenomenon, we again suggest, is that popular constructivism and its criticisms, despite their seeming disagreement, are similarly grounded in a dualist philosophy and consequent separatism of human mind and external world. When constructivists identified behaviourism's failure in addressing the relationship between mind and body, they set out to overcome the difficulty in thinking by postulating the interactivity of human mind and the world. However, when they attempted to extend a cognitive psychological idea into the whole area of human epistemology, they were inclined to go to another extreme, that of relativism. When critics of constructivism spotted such extreme tendency in constructivist theories, and yet could not avoid making the same mistake themselves, they were in fact looking at the issue of the relationship between mind and body, between human beings and the world through the same lens of separatism.

It is useful to discuss Kuhn's (1970) notion of paradigm for clarification of this concept will illuminate our position that dualism, and not constructivism or behaviourism, is the true paradigmatic framework behind so much of the popular constructivist accounts. As mentioned above, Kuhn's discovery of the role of scientific communities in the advancement of natural sciences has brought home to him ceaseless disputes and accusation of being epistemologically relativist. A paradigm is "a theoretical framework, a set of assumptions, an orientation toward specific problem solving practices, and a rule for how these problems should be approached and proposed solutions appraised" (Horner and Westacott, 2000, p. 113). Paradigms do not involve descriptions and explanations of specific phenomena; they only involve the organisation of the descriptive and explanatory principles. A paradigm is not the equivalent of the total sum of concrete laws of problem solving; it is a general orientation for human reflection and hence a *sui generis* logical existence. A paradigm is a general hypothesis about 'the truth', but not the complete truth as such. In passing, it is of relevance that Russel (1998) distinguishes two levels of truth – intentional and extensional truth; and Kant differentiates knowledge of the *a priori* and the *a posteriori* natures. Paradigms are comparable to intentional truth and *a priori* knowledge, which cannot be objectively or empirically asserted, only individually represented and internally experienced. On the other hand, practical laws in normal science, as well as extensional truth and *a posteriori* knowledge can be objectively evidenced and asserted.

Kuhn's observation of paradigm shifts in scientific advancement does not point to epistemological relativism because revolutionary science and paradigm shifts occur on the basis of normal science. A paradigm shift, or 'gestalt shift', does not involve the complete and total change in more detailed and particular problem solving methods. Hence, paradigm shifts do not entail epistemological relativity or epistemological meaninglessness, for the choices of communities of scientists of theoretical orientations in the history of scientific development were not accidental or irrational decisions. This is evidenced by the continuity of some basic beliefs from Newtonian physics to Einstein's relativity theory. The process of paradigm shifts reflects the progress of human epistemology evolving around human wisdom and rationality as the centre stage. But again this is not to place subjectivity in a superior position to objectivity, for concrete laws of problem solving within a general paradigmatic framework must be established on the basis of empirical evidence (Liu, 1989).

Phillips realised that in detangling constructivist arguments it is beneficial to look deeper into their epistemological and philosophical concerns. This gave his understanding a good starting

point. But his eventual resort to “human the inventor vs. nature the creator” as a defining standard of constructivist theorists is a return to the mind and world parallelism and the inherent problems of dualism. We suggest that misunderstanding of Kuhn’s notion of paradigm and mistaking paradigm shifts as the complete overturning of specific scientific practices have given rise to many accusations of epistemological relativism.

Based on a clarified definition of paradigm, we contend that constructivism and behaviourism represent variants of theoretical and ideological emphases **within the same paradigm of dualism**. Until we understand that, we will not be able to comprehend the real causes of the shortcomings in both pedagogic approaches and to start looking for solutions to our problems elsewhere – outside of the dualist paradigm.

In the following section, we discuss some key concepts in Vygotsky’s educational philosophy and argue that the philosophy underlying his writings is closer in nature to Kuhn’s notion of paradigm than to detailed predictive and prescriptive laws of human cognition. We show that Vygotsky’s concepts and ideas arise from adoption of historical-dialectical-monist philosophy and are incompatible with a dualist approach; indeed the application of a dualist lens to interpret Vygotsky’s theory has resulted in the superficial interpretations found in the popular accounts of social constructivism.

VYGOTSKY’S PERSPECTIVE REVIEWED: SOME KEY CONCEPTS

Recent challenges to the social constructivist ideology of education have placed Vygotsky’s theory in a curious position. While Vygotsky’s theory is assumed, by many, to be the origin of social constructivism, especially by those non-affiliated with social constructivism, other scholars claim that he cannot be said to be ‘social’ enough. Lave and Wenger (1991), for example, in postulating their situated learning theory, disapprove of Vygotsky’s concepts of learning internalisation, generalisation, and scientific concepts, for they contain only “a small ‘aura’ of socialness that provides input for the process of internalisation, viewed as individualistic acquisition of the cultural given” (p. 47).

In their call for going beyond the individual-social antimony in discussions of Piaget and Vygotsky, Cole and Wertsch (2004) state that the standard vision of Vygotskian theory as social in nature is a simplified stereotype of the man’s original works. Also, whether Vygotsky ever considered himself as a social constructivist is not clear to us. What Vygotsky **was** happy to call himself was a Marxist, a historical materialist (Davydov, 1995).

In the following section, we review some of the key concepts, frequently quoted, misused, and criticised. We base our discussions mainly on Vygotsky’s original works and his students’ writings.

The Role of the Social and the Collective in Learning

A central concept in Vygotsky’s theoretical system is the role of social collectivity in individual learning and development. Three popular comments on this concept are: (a) it emphasises the role of the social and the collective, but ignores the role of the individual (Resnick, 1996); (b) it fails to address how the external world is bridged across to the internal mind (Fox, 2001 and Cobb, 1996); and (3) it implies a “blinker social consensualism” (Fox, 2001), and therefore epistemological social relativism.

Implied in these comments is a dualist polarising of the individual and the social, as only when the individual and the social group are viewed as fundamentally separate from each other, can one be

emphasised, whilst the other is overlooked. This is the main reason for the inability to explain individual development from social interaction and social change found at large.

To Vygotsky, the relationship between the social and the individual in the historical processes of social and individual development is one of dialectical interaction and functional unification. First, about individuals in society, the mind is not seen as autonomous from the social cultural group. The process of individual development could perhaps be summarised as ‘the social – internalisation through sign mediation – restructuring conceptual system – new understanding/consciousness’. In this sense, individual mastery and development must be based on history and culture; moreover, the individual should be enabled to stand above the social collective because of the ability of the mind to generate personal understandings. This has different implications for educational practices from the common perception that Vygotsky “argued that knowing is relative to the situations in which knowers find themselves” (Cobb, 1996, p. 339). By contrast, the statement that “any function in the child’s cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. It appears between people as an interpsychological category, and then within the child as an intrapsychological category” (Vygotsky in Wertsch, 1985, p. 60) points to the belief that education must not only be content with children’s enculturation, but must also promote individual consciousness as a consequence of enculturation. This stands in direct contrast with situated learning theory, which “suggests that learning is bound to the specific concrete situation in which it occurs, and transfer is difficult, if not impossible” (Eggen and Kauchak, 1999, p. 285). The philosophy underpinning situativity theory is that individuals as non-initiative beings receive one-sided external forces from the social. In Vygotsky’s theory, the development of intellect and rationality beyond situations is the central aim of education.

Secondly, the conceptualisation of the social and the collective is not to be viewed as a mere total sum of separate, independent individuals. The philosophical establishment of **the collective being always larger than the total sum of individual persons** underpins a major part of Vygotsky’s theoretical system. Because every individual member always brings to the group a personal contribution at their own levels, and between individuals their unique contributions interchange, the collective forever amounts larger than the total number of separate individuals.

For Vygotsky, the connection between the collective and the individual consciousness exists through the **collective subjectivity**, which is produced historically by joint-collective enactment. The social external world is not seen as a super-structure, fixed and self-sufficient, but is given shape historically by collective participation and collaboration. The collective subjectivity with participation and contributions from its members as authentic beings now becomes not just larger than the total sum of individual beings, but also **a qualitatively different existence**. On the other hand, the assimilation by the individual of collective cultural practices and values can only occur in collaboration with other people, within social settings’ offerings and constraints. In a school setting, Vygotsky underlines that three elements are thus always active: the environment, the student, and the teacher (Davydov, 1995).

This conception of the social and the individual being closely interconnected, functionally unified, constantly interacting, and the change and development in one relentlessly influencing the other provides a valid explanation for both social and individual change.

The Role of Language

The role of language in learning and development is another most quoted and confoundingly represented notion in current literature. Fox (2001, p. 21) questioned how language, “built out of

brute physical sounds or visual marks, or similar alternatives”, can become “the material out of which most constructivists seem to want to build knowledge”. In addition, Fox argued:

Another variant of this extreme socialisation theory is to argue that all knowledge is based on language and on linguistic representation, or perhaps on semiotic systems more generally. Human minds are said to be ‘shaped’ by language, although it is not clear why this one form of experience is held to exclude others (viz. perceptual experience, practical trial and error and non-verbal emotion). If held literally, this view denies any knowledge to infants in their pre-linguistic phase (all of Piaget’s sensori-motor intelligence) and tends to imply that animals cannot know anything. It also ignores all the implicit knowledge we have of the world which we have never put into words. (Fox, 2001, p. 29-30)

Vygotsky’s focus in his psycholinguistic studies is on language use or word meaning, which he compared metaphorically to the living cells in a biological organism. His linguistic study was more like what we call today semantics, pragmatics and study of discourse (Robbins, 2001). Vygotsky stresses carefully that one cannot reduce beyond word meaning without great loss in understanding. He gives an analogy to water molecules whose properties cannot be understood by looking at the properties of separate hydrogen and oxygen. For if hydrogen burns and oxygen sustains combustion, why should water be liquid (Vygotsky, 1987, Vol. 1, p. 45-6)? He explains the socio-psychological nature of word meaning and its function in intellectual development as follows:

The word does not relate to a single object, but to an *entire group or class of objects*. Therefore, every word is a concealed *generalisation*. From a psychological perspective, word meaning is first and foremost a generalisation. It is not difficult to see that generalisation is a *verbal act of thought*; its reflection of reality differs radically from that of immediate sensation or perception.

It has been said that the dialectical leap is not only a transition from matter that is incapable of sensation to matter that is capable of sensation, but a transition from sensation to thought. This implies that reality is reflected in consciousness in a qualitatively different way in thinking than it is in immediate sensation. This qualitative difference is primarily a function of a *generalised reflection of reality*. ... At the same time, however, meaning is an inseparable part of the word; it belongs not only to the domain of thought but to the domain of speech. It is obvious, then, that our method must be that of semantic analysis. (*ibid.*, p. 47; italics original)

The key to understanding the role of language in mental development lies in the dual nature of word meaning or language in use, otherwise called discourse. Contained in each word are two levels of meanings: one is the object or phenomenon the word refers to in the objective reality; the other is the relationship of the word with other words. Both levels combine to give the word its social semiotic significance. Encapsulated in language use, discourse, or speech behaviour in general are on the one hand the historical and cultural establishment of human speech system, and on the other hand the speaker’s situation-specific, subjective verbal (re)action. The mastery of language use always entails not just producing grammatically correct texts, but also producing appropriate speech as required by situational and communicative demands. The acquisition of language of such dual nature is the foundation of all our verbal and higher mental thinking. This is because, in this sense, mastery of language use represents the acquisition of individual subjectivity and the external social reality. The ability to produce situation-wise perlocutions involves the individual’s appropriation of history and culture as well as individual subjectivity standing above history and culture as a consequence of intellectual development.

Furthermore, language should not be seen as merely the accidental assembly of purely physical sounds and forms because any language system is at the same time the result of the whole developmental history of the language. To study a language is to study a meaning system as a consequence of historical development. Due to the historical aspect of semantics, the interaction between individuals and society is now placed not within constant parameters of stability but on a continuum of time and historical development.

In his conceptualisation of language and its role in mental development, Vygotsky acknowledges immediate sensations and perceptions, but he does not dwell on them. His is a development-oriented approach and philosophy (Davydov, 1995). At the same time, Vygotsky acknowledges sensation and perception, it is this language-mediated thinking that he calls the higher mental ability, for the transition from the immediate sensation to thinking is what differs man from animals. His object of investigation – not sounds, not syllables nor marks, but speech units with meanings – reflects an awareness of the living, holistic feature of human as social beings with our social lives.

Consciousness

Two interconnected points are focal in understanding this concept in Vygotsky's theoretical and philosophical edifice. First, for Vygotsky, consciousness is defined as an individual's general perceptual orientation. Mastery of language, development of conceptual system, and consciousness are all but different aspects of the same process – that of intellectualisation. Second, in the development of consciousness, the sequence is from the social to the individual.

In a discussion of the genesis of higher mental functions, Vygotsky and Luria (1994) note that there are often intellectual and intuitive points of view. The intellectual point of view holds that the development of higher mental functions is a process of the individual's invention or discovery through the form of the so-called 'aha' reaction, and such discovery will later, once and for all, allow the individual to become consciously aware and to conduct his or her reasoning in a purely logical and deductive way. The latter point of view believes that higher mental functions, (e.g., consciousness), are *a priori* spiritual structures developed intuitively. The basic dualistic tenets underlying these views are still prevalent today, reflected to various extents in different conceptions of the role of language, consciousness and creativity.

For Vygotsky, **consciousness is not the ability of an individual to know all the ontological answers to the universe, rather, it is the ability to perceive meaningfully.** The development from lack of consciousness in the child to consciousness coincides with the transition "from nonverbal and therefore nonmeaningful perception to meaningful and verbal object perception" (Vygotsky, 1987, p. 190). "Meaningful perception is generalised or abstracted perception"; and to perceive something from a meaningful different way enables the individual to "acquire the potential for new relationships with it" and "to acquire new potentials for acting with respect with it" (*ibid.*, p. 191, p. 190). Therefore, as consciousness emerges, biological mechanisms and spontaneous concepts start to recede and generalised concepts attained with signs as tools start to orientate mental activities. Next, confronting the enigmas of consciousness in psychology, Vygotsky explains the genesis of consciousness in the child, emphasising how its development is a process of functional unity of mental operations.

[T]he child's mental development consists not so much in the development or maturation of separate functions as in changes in the connections and relationships among these functions. Indeed, the development of each mental function depends on these changes in interfunctional relationships. Consciousness develops as a whole. With each new stage in its development, its internal structure – the system of

connections among its parts – changes. Development is not a sum of the changes occurring in each of the separate functions. Rather, the fate of each functional part of consciousness depends on changes in the whole.

...These interfunctional connections and relationships are neither constant nor inessential. They cannot be placed outside the analytic frame within which psychological investigations are carried out. Change in these interfunctional connections, -- *change in the functional structure of consciousness – is the main and central content of the entire process of mental development.* ... If we fail to resolve this problem, we will not be able to understand the changes we observe in the isolated functions. (Vygotsky, 1987, pp.187-188, italics in original)

Vygotsky distinguishes consciousness, the ability to perceive meaningfully, from conscious awareness, and defines the latter as “an act of consciousness whose object is the activity of consciousness itself” (Vygotsky, 1987, p. 190). Conscious awareness is developed in the same way consciousness is – when consciousness means being able to generate meaningful generalisation and connecting relationships between objects and concepts, conscious awareness involves the ability to interconnect processes of mental activities.

This definition of ‘the consciousness of consciousness’ does not entail any intuitive mystification of the mental capacity as “[c]onsciousness always represents some piece of reality” (*ibid.*). “[C]onscious awareness and mastery characterise only the higher stages of the development of a given function. ... conscious awareness and mastery are two aspects of the same process. ... conscious awareness enters through the gate opened up by the scientific concept” (Vygotsky, 1987, pp. 190-191).

We find it comparable here that while Kuhn uses the term ‘paradigm’ to refer to a general reflective orientation shared by members of a scientific community, on the individual level, consciousness represents a similar generalisation of experience based on which one conducts rational thinking. As paradigms can shift, so can consciousness. Consciousness is not formed once and for all, as “Consciousness is prone to splintering. Consciousness is prone to merging. (They are essential for consciousness.)” (Vygotsky’s notes in Rieber and Wollock, 1997, pp. 136-137; cited in Robbins, 2001, p. 23). When consciousness shifts, or in other words, when the individual reorganises his or her conceptual system, he or she acquires potentials of perceiving new connections and of new possibilities of action. Consciousness, therefore, does not involve the complete knowledge of the absolute truth. It is a neutral concept referring to the general organisation of one’s conceptual system, which orientates one’s perception and sense-making. It emerges first on the social plane and then on the internal plane as generalised relationships are formed.

About the social origin of consciousness, Robbins (2001, pp. 21-22) has the following insight:

It is important to remember that the social precedes the individual in Vygotsky’s understanding of consciousness, and that it is created and expanded through interaction with the world, and “like Marx, Vygotsky ... argued that ‘the social dimension of consciousness is primary in time and fact. The individual dimension of consciousness is derivative and secondary, based on the social’” (Wertsch, 1983, p. 22). Vygotsky stated that “this also means that consciousness cannot focus on itself, that it is a secondary and derivative activity”. (Vygotsky, 1979, p. 27)

Thus, for Vygotsky, consciousness is derived from the prevalent meaning systems in one’s social environment. In his essay on the socialist alteration of man, Vygotsky (1994) agrees with Marx and Engels in recognising how social division of labour and class cripples the individual

personality by denying the opportunity of all-rounded development of physical and spiritual faculties. In this sense, **perhaps for Vygotsky the central aim of education is not so much to develop consciousness, but to develop the all-rounded personality and freedom of consciousness from social divisions.**

The primacy of the social in consciousness development should not, however, be read as the one-sided effects society have on the mental functioning of individuals as passive recipients of external forces. In fact, that the individual personality is shaped by the social environment points to the fact that the individual draws from society the resource for growth. So, the paradox here is, if society, as the birthplace for individual development, can constrain and distort human personality, it can also expand and free it. The change and growth of the society and individuals are closely interconnected.

FUNDAMENTAL TENETS IN VYGOTSKY'S PHILOSOPHY

History

Robbins (2001) points out that “[a] basic understanding of Vygotsky’s concept of history is important, because it represents a centrepiece of his psychology-philosophy” (p. 41). Vygotsky adopts the view of Marx and Engels that the laws of nature are the laws of history, studying the human psychology not within stable parameters of time, but in its developing dynamics. This is so because “the essence of a dialectical approach ... is to study something historically” (Scribner, 1985, p. 122; cited in Robbins, 2001, p. 41). This could perhaps be best illustrated in Vygotsky’s conceptualisation of the role of language in mental development, since the mastery of language is believed to be the central mediator of the emergence of all higher mental functions. Language itself is a product of history; the internalisation of linguistic generalisations, therefore, makes the individual’s mental functioning the product of human history as well (Bruner, 1987).

From the fact that history and culture is the birthplace of language and individual thinking, however, we need not conclude the necessary uniformity of individual language use and mental activities. For the mastering of speech does not mean the mere reproduction of the linguistic tool developed historically; it also requires the ability to “textualise one’s intent and to situate a locution appropriately in a personal context” (ibid, p. 6). From here, we see the true intention of Vygotsky: from history and culture to internalisation, to personalised generalisation, and to the possibility for the individual to stand above and go beyond history and culture.

Dialectics

Together with history, dialectics is another element that incorporates the sense of the dynamic in Vygotsky’s conceptualisation of individual development. Robbins envisages the transcendental and heuristic nature of dialectics:

Much of Vygotsky’s works are based on dialectical principles and it is important to realise that the dialectic is not a scientific, inductive approach used to arrive at a finished product (i.e., *ergon*). Indeed Engels stated that there are no hard and fast rules in dialectics (cf. Engels, 1925, p. 153).

The dialectic contains no exact element where proof can be obtained and it possesses only a small element of deduction. (Robbins, 2001, pp.65-66)

In fact, as we argued before, all hypothetical heuristics contained in a paradigm cannot be empirically asserted. As logical *sui generis* existence, they are built on the basis of rationality and rationality alone. On the individual level, “[w]ithin this system of dialectics the individual does not experience social relations as something completely external, and although the individual as a

particular derives consciousness, that aspect remains a generalisation or idealisation of experience” (Robbins, 2001, p. 67).

Monism

Vygotsky’s monist position should not be confused with traditional monist philosophy, which held that the universe consisted of a singular substance. His is a functional monism where all living factors exist in interdependency and form a dialectic organic whole. This philosophical stand is reflected, for example, in Vygotsky’s depiction of the functional relationship between the social and the individual, in his units of analysis in language (not words, grammars, sounds, but word meaning and speech), in his comparison of living cells and organic systems, and in his conceptualisation of the emergence of consciousness as a result of interfunctional development of mental capacities as a unified whole. The monist view enables one to go beyond the boundaries set by dualism, and to see how man and world, mind and reality can become the source of growth and change for each other.

Paradigmatic Philosophy

In philosophy of science, reflections upon the relationship between the mind and nature are bounded by two extreme views: one is the complete correspondence of the two, a view held by many natural scientists; the other is a complete incommensurability of the two, a view held by many social and humanity scientists. While the former is associated with the positivist and fundamentalist attitude in the pursuit of truth, the latter necessarily points to a relativist epistemology and to a meaninglessness of life as expressed in existentialism. In the philosophy of science and human psychology, if causality and the dualism of man and nature and of mind and body (not behaviourism or constructivism) are the real paradigms governing people’s visions, the benefit of Kuhn’s scientific historical discovery is that it provides a way out of the dualistic dead end, namely, the way of historical-dialectical-monism.

Reflected in the general, historically developed, and hypothetical nature of paradigms are three implications: (a) the connection of nature and the human mind, for the existence and establishment of all human hypothetical paradigms *per se* prove the **understandability** of nature to the human kind; (b) the pursuit of truth is going to be an endless effort, for the representation of the universe by the human mind can only be true to the human mind, and cannot be objectively asserted as true to the universe as such; and (c) the human cause of the pursuit of truth is not meaningless, for although we cannot and should not require from science the absolute whole truth about nature, nevertheless, the historical advancement of human rationality is bringing us to an ever closer representation of what truth is (Liu, 1989).

In Vygotsky’s whole career in human psychology, he was searching for and verifying the rationality of such a paradigm-like principle:

... Vygotsky believed that explanatory principles that are relevant for psychology are philosophical conceptions that have been further developed. They are borrowed from philosophy by psychologists ... Thus, according to Vygotsky, methodological analysis in psychology involves a twofold process: First, it begins with an existing theoretical apparatus ... Then it develops an explanatory principle and defines its place in a philosophical tradition. Then, conversely, Vygotsky envisioned the verification from the perspective of the logic of this philosophical tradition, a verification of the application of philosophical concept as an explanatory principle in psychological theory and its development on the basis of the given explanatory principle. Vygotsky (1982, p. 55) himself called this the “logical-historical” method, in contrast to the

“formal-logical-semantic” method. (Davydov and Radzikhovskii, 1985, pp. 50-51; cited in Robbins, 2001, pp. 22-23)

In his search for a way out of dualism, Vygotsky found in Marx, Spinoza (See Robbins, (2001) for detailed analysis), and others the philosophical inspirations of the alternative of historical, dialectical and functional unity of the mind and the body, and of the subjective and the objective. We hope this was clearly illustrated in our analysis of Vygotsky's key concepts in Section 4 above – that in Vygotsky's educational philosophy, the connection and interaction of human rationality and the external world is reflected in at least three aspects: (a) the social collectivity is a qualitatively different entity from the total sum of isolated individuals; (b) language functions both as indicator of the objective reality and as the mental generalisations and activities; and (c) that consciousness is conceptualised as human rationality and the endless potential of the development of rationality rooted in the ceaseless dialects of mind and world.

Contemporary mis-readings of Vygotsky originate from two causes: (a) from taking paradigmatic philosophy literally, and (b) confusing the transcendent with the directly experienced and applicable. Such is the difference between the intentional and extensional truths, and between *a priori* and *a posteriori* knowledges. Once we establish the difference between paradigms and specific empirical rules, we may be able to see that constructivism is not offering us a new paradigm of thinking. Its claims display many traits of the dualist tradition. Being able to see things outside the mind versus world framework will lead to clearer understandings of Vygotsky.

CONCLUSIONS

There has been a move from behaviourism to constructivism in educational psychology, but philosophically there has not been a shift from dualism. On the other hand, we argue that Vygotsky's educational theory is guided by an alternative epistemological paradigm – that of historical-dialectical-monism. This philosophical rigour has not been widely recognised in popular literature. Paradigms, such as causality and dualism, and historical-dialectical-monism, can never be objectively asserted, and many ideas in Vygotsky's educational theory are yet to be verified and evidenced. While we can never be able to validate ideas like the social collective differs qualitatively from the total sum of separate individuals, we may expect to find in them stronger explanatory power for our empirical research and reflections. In fact, perhaps the deepest insight one can draw from Vygotsky, Kuhn, and other thinkers is that human beings' search for 'the truth' will be an eternal cause. In the meantime, we must have faith in the unknown and progress will evolve with the development of human rationality. This should apply equally to natural and social and humanity scientific explorations.

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The role of environmental education in compulsory education: The case of mathematics textbooks in Greece¹

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School plays an important role in the formation of children's positive attitudes towards the environment. Mathematics textbooks also play an important role in environmental education, because environmental problems have two distinct features: the quality and the quantity of environmental resources. It is well known that as students go higher in their education they often show a negative attitude toward mathematics. One possible reason for this is that mathematics contains many abstract concepts. Another reason is that students think that mathematics has nothing to do with their everyday needs. In this study research is conducted on the frequency of environmental topics in selected Greek mathematics textbooks. The results show that there are some environmental topics, but the way they appear does not help students forming positive attitudes towards the environment.

Environmental education, Greek school curriculum, environmental topics,
school programs, mathematics textbooks

BACKGROUND

Increased concern about the environment in recent decades has paralleled the development of environmental education, and in particular has clarified its aims and purposes (Sterling, 1995). Both school and family, play important roles in the formation of children's positive attitudes towards the environment. Environmental education curricula may raise environmental literacy, and include knowledge that goes beyond an understanding of the environment. Environmental education should build concepts and awareness about the ways in which behaviour affects environmental literacy, knowledge and skills and a critical awareness of environmental action and skills. At an international conference in Greece (October 2000) entitled 'Environmental Education in the Context of Education for the 21st Century: Prospects and Possibilities', it was suggested that a curriculum should be designed to develop three types of literacy associated with the environment: functional, cultural and critical. Functional environmental literacy is basically book knowledge related to environmental and scientific concepts; cultural environmental literacy explores the reasons that society values the environment; and critical literacy encourages students

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to use functional and cultural environmental literacy to determine appropriate future action as citizens of the environments in which they live.

It is also important to consider and question which concepts students and interested observers should understand to be thought functionally and environmentally important. Cherrett (1989) has identified some important concepts such as ecosystem succession, energy flow, materials cycling, food webs, carrying capacity and species diversity. Other researchers have found that students bring many misconstrued or alternative conceptions to the science classroom and suggest that these need to be taken into account in curriculum design (Driver et al., 1994, Hlebowitsh, 1991, Sheldrick, 1991). Students often confound the meaning of words, for example, *weather* and *climate* (Spiropoulou et al., 1997), *heat* and *temperature* (Watts and Gilbert, 1985), words that are important in environmental education. Adults also have similar misconceptions about natural and environmental phenomena (Munson, 1994; Orr, 1992). Orr (1992) is concerned about the inaccuracies in teaching about the environment and the effect that these inaccuracies have on environmental literacy. He makes the connection between literacy and behaviour when he talks about the impact that environmentally illiterate adults have on the world, because these adults, even if they want to improve the environment, may not know how to because they lack basic knowledge about how the environment functions. We suggest that the same is true for students. Therefore, teachers are failing to develop environmental literacy because they are not incorporating environmental concepts or ecological principles into the subjects they are teaching.

Mathematics textbooks, together with other subject-specific textbooks, are didactic tools that play an important role in environmental education, because environmental problems involve not only the quality of air, water, land resources, material cycling, energy saving and other issues, but also their quantity. It is also known that students in mathematics classrooms, as they go higher in their education, tend to show an increasingly negative attitude toward mathematics. One reason for this phenomenon is that these classes contain an increasing number of abstract concepts. Another reason is that students think that these studies have nothing to do with everyday life needs and problems. According to James et al. (2000), when courses in mathematics, science and technology are well planned, students improve their conceptual skills. In the studies, where mathematics, science and other subjects are integrated, the effects of these on student success, show that students who gain mathematical knowledge, also gain scientific knowledge that is based on mathematics, and develop a preference for social- scientific activities.

Consideration is given to the fact that mathematics that is based on environmental topics and the ability to analyse and propose solutions to solve environmental problems encountered by students, influences the ways in which mathematical processes and abilities may affect success in science.

THE GREEK EDUCATIONAL SYSTEM AND ENVIRONMENTAL EDUCATION

In Greece, there is a nine-year compulsory school system that is divided into two parts. Grades 1-6 are referred to as the primary school and Grades 1-3 of middle school are called Gymnasium. Until the early 1980s environmental education had an informal place in Greek schools. Education was conducted by teaching separate subjects in which environmental education was generally absent. Middle school time was divided into physics, chemistry, biology and mathematics lessons. The results were fragmented and learning was done by memorisation with little relation to everyday life.

Since the early 1990s, the system has changed. Environmental education has grown in many schools in Greece, and is now institutionalised in the Greek education system, through the enactment of *Law 1892, Article 111 /1990*. According to this law, environmental education is a process that leads to responsible individual and group actions with positive results to both the biophysical and sociocultural environments and assists with the development of critical thinking,

problem solving and effective decision-making skills. The purpose of this law is to increase awareness, change attitudes and behaviour, elucidate values, build commitments, provide skills, and encourage positive action towards the natural, social, technological and historical environments.

The commitment of the Ministers of Education from the country members of the European Union (1988) for action, promotion, and development of environmental education has been significant for its institutionalisation in Greece, in relation to the following: (a) the promotion of environmental education in all grades of education; (b) the consideration of the environmental education goals in the designing of school programs; (c) the importance of environmental education in teacher training; and (d) the need to supply schools with environmentally positive educational equipment.

Moreover, environmental education provides the school with a positive approach to society, because environmental education helps the entire process of education in the following ways:

1. *For students*, it teaches them to (a) learn how to learn, (b) improve their decision-making and problem solving skills, (c) develop their personal potential, and (d) act in a positive way to protect the environment.
2. *For teachers*, it enables them to (a) learn alternative teaching methods, (b) apply different teaching methods in the classroom, (c) become aware of students' potential, and (d) establish links between subjects.
3. *For curriculum planning*, it encourages students to (a) request a more student-centered educational program, (b) ask questions, (c) provide more time for students to think and act in a scientific way, (d) foster project-based learning in all school subjects, and (e) focus greater attention on environmental and health education.

Furthermore, focusing on environmental education enables the curricula to raise environmental literacy by incorporating knowledge that goes beyond an understanding of the environment. It also focuses on the many environmental themes and problems which should not be ignored, such as (a) climate changes and protection of the atmosphere, (b) protection of freshwater and marine environments, as well as the management and use of water resources, (c) an integrated approach to the planning and management of land resources by combating desertification and drought and by promoting sustainable agriculture and rural development, (d) combating deforestation, (e) focusing on energy flow and management strategies, (f) conservation of biological diversity and the management of fragile ecosystems, (g) environmentally sound management of toxic chemicals, cycling of materials and recycling of domestic waste, (h) understanding the relationship between the environment and technology. (i) studying science for sustainable development, and (j) protecting and promoting peace, improved human health, and combating poverty.

PURPOSE OF THE STUDY AND METHODS OF ANALYSIS

In this study the aim was to investigate the frequency of environmental issues and topics in Greek mathematics textbooks used in the years of compulsory education. The main focus of the research study was to find answers to the following questions:

- a) How many environmental topics are found in the mathematics' textbooks?
- b) Which of the topics is regional, which national and which are global?
- c) Are any of the topics seen as anti-environmental? (That is to say, have they been developed without consideration of social or environmental needs?)

Data for this study were collected from nine different mathematics textbooks used in the Greek educational curriculum. The first step was to find out if there is any dissemination of environmental topics either in theory or in practical exercises in the textbooks. We used content analysis to ascertain this information, and following Bamboucas (1998), the unit is the book page

RESULTS AND DISCUSSION

The relevant amount of environmental material in the nominated mathematics textbooks is presented in Tables 1 to 4 according to the level of the resource.

Primary School Mathematics textbooks

The first and second grade textbooks, given in Table 1, contain many photographs or pictures with natural and environmental themes, such as health foods, flowers, birds, mountains, and forests. The third and fourth grade books have fewer pages with environmental photographs or pictures, and in the fifth and sixth grade books there is an increase in appropriate environmental material. Most of the illustrations are presented to help students learn about the environment and to help them calculate or count amounts of foods such as milk and, sugar that are important in the diet.

Table 1. The relevant topics in the mathematics textbooks

Grade	Number of pages		Number of Environmental topics	
	N	%	N	%
1st grade	328	100	78	23.8
2nd Grade	310	100	38	12.25
3rd Grade	234	100	7	3
4th Grade	267	100	7	2.6
5th Grade	263	100	15	5.7
6th Grade	264	100	21	7.5
Total number	1666	100	166	9.2

Middle school (Gymnasium) mathematics textbooks

In the Gymnasium textbooks, presented in Table 2, environmental topics are included in both theory and practical exercises. There are no specific pictures or photographs and there is little numerical difference between these textbooks. Instead of pictures, there are diagrams or histograms which have environmental interest, such as population density, oil and food supplies, water pollution, or weather maps with information such as temperature and rainfall.

Table 2. The relevant topics in the mathematics textbooks

Grade	Number of pages		Number of Environmental topics	
	N	%	N	%
1st grade	313	100	15	4.8
2nd Grade	339	100	15	4.4
3rd Grade	275	100	10	3.6
Total number	927	100	40	4.3

Primary School Mathematics textbooks

The next step is to select material that helps students to develop awareness and skills to allow them to become involved in solving environmental problems such as material recycling and energy saving. This material is classified in eight categories shown in Table 3.

Gymnasium mathematics textbooks

The classification of environmental topics in primary mathematics textbooks, presented in Table 4, shows great diversity. Firstly, it gives an overall measure of the most beneficial topics such as plants, trees and forests, energy flow, and recycling materials. The topics are presented together

with pictures of deforestation, tables with fruit on them, butterflies and animals, examples of sustainable agriculture, water resources, and the consumption of petrol.

Table 3. Classification of environmental topics in primary mathematics textbooks

Environmental topics	Grade:	1st	2nd	3rd	4th	5th	6th	Total
Climate Changes								
Forests					4		1	5
Water resources			2					2
Land resources			1				1	2
Energy		1	7	1	3		2	14
Protection of biological diversity					1	1		2
Recycling			2		2		1	5
Environment and technology			2					2
Total number		1	14	1	10	1	5	32

Table 4. Classification of environmental topics in Gymnasium mathematics textbooks

Environmental topics	1st Grade		2nd Grade		3rd Grade	
	Theory	Practical Exercises	Theory	Practical Exercises	Theory	Practical Exercises
Climate Changes			2		1	1
Forest				4		1
Water		2				
Land		1				1
Energy	1	7	1	3		2
Protection of biological diversity				1	1	
Recycling material		2				
Environment and Technology		2		2		1
Total number	15		13 + 2 historical examples		8 + 2 historical examples	

How many environmental topics are found in the mathematics' textbooks?

The information in Table 4 lists the environmental topics in Gymnasium mathematics textbooks that are presented in theory, practical exercises and as historical examples as follows:

There are four reports on the topic of climate change. Two reports show weather maps, one with data on air temperature measurements and the other with data on wind velocity. Other examples show vehicles which use highways, but without a reference on air pollution.

There are five reports on the topic of forest-plants. There are four references in the practical exercises on the felling of trees to open a fire-safety road, the construction of a square without any reference to tree re-planting, the calibration of the area in square metres without any reference to the contribution of trees, and the importance of green areas in urban locations.

There are two reports on the topic of water. There are two references in exercises concerning the cost of the construction of a water tank to supply water to three villages and the process of filling of a water tank from a tap without any reference to the serious problem of water shortage.

There are two reports on the topic of land and soil. There are two references on the use of pesticides that do not make any mention of the pollution and possible desertification of the soil or that point to the profit the farmers may gain if they utilise biological cultivation.

There are 14 reports on the topic of energy. There are seven reports on the use of petrol for the heating of homes or the consumption by new model cars, but with no reference to pollution issues. However, there is the suggestion that over-consumption would be harmful to the environment. There are four reports that discuss electric power bills and the percentage that is spent on electricity consumption, but there is a lack of any reference to issues of energy saving.

There are two reports on the topic of promotion and protection of biological diversity. The two references illustrate the percentage of plants and animals in the environment, one in the theory and the other in the practical exercise section.

There are two reports on the topic of recycling material. There are two references in the practical exercises. One illustrates the construction of a disposal system for waste water and the other describes the circulation of newspapers without any mention of paper recycling.

There are five reports on the topic of environment and technology. There are references in the practical exercises concerned with (a) the calculation of the quantity of material used in the painting of a school, (b) the calculation of the distance between three children using cell phones, (c) the construction of tall transmitting antennas without any discussion on the question of radioactivity, (d) the construction of a highway without any additional reference to the felling of trees, and (e) the construction of a factory without any mention of any kind of pollution that may be created by such an activity. Finally, there are four references to historical examples that do not have any relation to environmental issues.

Which of the topics is regional, which national and which are global?

The second question concerns environmental issues that are presented in mathematics textbooks. For example, when concepts such as rivers, fields, built squares and built areas are presented, there is no mention of a particular village or town and the places referred to do not have any regional, national or global dimension. However, there are reports concerning the calculation of economical profit, areas of energy consumption, and other issues of national interest are discussed.

Are any of the topics seen as anti-environmental?

In textbooks designed for Primary School and Gymnasium, many problems include an anti-environmental dimension. Some specific examples are: (a) water usage with a water tank that is filled from the main water supply instead of using collected rain water; (b) the use of a pump for watering of fields discusses the crucial problem of water shortage; (c) the use of natural resources including the over-consumption of fossil fuels, petrol and gas, for transportation and heating needs that shows no ecological awareness about the question of over-consumption of natural resources or issues concerning air pollution; (d) wastage of natural resources with the reference to a gas leak from a broken reservoir is used only as a vehicle to calculate the percentage of gas that is released into the environment; and (e) the use of pesticides, and the destruction of trees is mentioned so that the diameter of the tree trunks and the paving of a square may be calculated rather than a discussion about the replanting of felled trees or the biological restoration of used space.

CONCLUSIONS

Therefore, the purpose and practice of environmental education involves gaining appropriate knowledge as well as developing skills in decision-making and strategies for implementing change rather than taking action. In this way environmental topics in mathematics textbooks are able to provide students with the opportunity to heighten awareness about natural, social, technological and historical environmental issues. Moreover, if societal needs and values are seen to be changing, education must consider this fact and provide opportunities for students to investigate both the quantity and the extent of environmental problems.

This study investigates the frequency of environmental topics in the mathematics textbooks. The results show that there are a number of environmental topics in both theory and practical exercises, but the way they appear does not help students to develop positive attitudes towards the

environment. The conclusion derived from the above information illustrates the existent preference for bio-diversity, since there are several reports concerning the flora and fauna without, however, referring to the subject of animal and plant extinction. Moreover, there are also many reports concerning particular types of trees that do not give sufficient attention to the dangers that forests face as ecosystems, such as deforestation and conflagration.

Furthermore, reports concerning the soil refer to the use of pesticides and the cultivation of vegetables and fruit, while there are eight reports on the availability of drinkable water, the use of water pumps, and the construction of water tanks. It is also notable that there are very few reports on recycling useful materials. Finally, there are several reports on petrol and oil consumption for transportation and heating, but only one report on ways of saving energy.

Some references made to issues such as animal extinction, the placement of solar-selector cells, the construction of water collectors highlight only the mathematical dimension of the exercise without drawing the reader's attention to environmental issues.

Our recommendation is that school-textbooks and other instructional materials should be peer-reviewed in the preparation stage so that input from scientists, economists and other experts in environmental studies may be developed and included at least in the Gymnasium and High Schools. Moreover, educators, textbooks writers and teachers should receive more substantive preparation in the natural sciences, economics, and mathematics, as the ICEE (1997) has recommended.

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Teachers and their international relocation: The effect of self-efficacy and flexibility on adjustment and outcome variables

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In this study the adjustment process in a designated group of expatriates, (teachers), who have severed ties with their home country and employer is investigated. Based on existing literature, the value of self-efficacy and flexibility on the adjustment process was explored. It was hypothesised that adjustment would result in reduced turnover intention, increased life satisfaction, and higher job satisfaction. Results revealed the significance of self-efficacy but failed to reveal a significant relationship between flexibility and adjustment. As a result of this study, there are some clear implications for individuals and organisations involved in the expatriation process. From a personal point of view, those who score high on scales which measure self-efficacy would appear to be the ones most likely to find success within the international relocation process. From an organisational perspective, the accurate measurement of self-efficacy may provide valuable information to the employer regarding those applicants that have the greatest probability of adjustment. Given that this study looked exclusively at educators in its sampling, the implications for the staff of faculties of education, who are seeing increasing numbers of their graduates accept postings in foreign jurisdictions, are significant.

Expatriate, adjustment, relocation, self efficacy, flexibility

BACKGROUND

There has been increasing interest in the issue of expatriate adjustment over the recent past (Luthans and Farner, 2002; Wang, 2002). This is due primarily to the incremental importance of international trading, cross-national manufacturing and the emergence of a global economy (New York Times, 2002), all resulting in a dramatic increase in the expatriation of employees (Dodd, 2003; Harzing, 1995). This is especially profound within education where ever increasing numbers of foreign countries are each year seeking out the services of university trained teachers, (particularly those trained in English speaking countries), in perhaps a perceived effort to give their young citizens the necessary skills required to compete effectively in this newly emerging borderless economy (Brown, 2004; Richardson and Richardson, 2002-2005). With respect to this view, although there can be little doubt that employment opportunities now know no national boundaries, conversely, current research in the field reports a relatively high failure rate within these proliferate expatriate assignments (Black, 1988; Black and Gregersen, 1999; Down, 1978; Tung, 1981), with education most likely being no exception to this general rule, although there has been very little published research devoted exclusively to the study of educators serving in foreign destinations.

Nevertheless, for the employee in general, across all disciplines, it is evident that adjustment following foreign relocation is fraught with tremendous amounts of anxiety, stress, and pitfalls (Harvey, 1983). Although the term 'adjustment' is used frequently in the literature (Adler, 1991; Black, Gregersen, and Mendenhall, 1992), there does not appear to be a consistent or universal definition of it. However, with this point being conceded, when it comes to measuring cross-cultural adjustment, the criterion of whether or not an individual returns prematurely from his or her overseas assignment is the one most frequently applied (Baker and Ivancevich, 1971; Desatnick and Bennett, 1978; Lanier, 1979; Misa and Fabricatore, 1979; Tung, 1988). By utilising this particular perspective, studies overwhelmingly indicate that between 30 per cent and 50 per cent of all expatriate employees ultimately terminate their employment before their contract officially expires, with rates ranging from 25 per cent to 40 per cent when associated with a developed country, to as high as 70 per cent when associated with a developing country (Buckley and Brooke, 1992; Shay and Tracey, 1997). However, premature termination of contract may not be the only reliable indicator of overall adjustment. For example, several other studies have tried to measure the effectiveness of expatriate employees in their overseas assignments and have discovered that a statistically significant number, although not returning to their countries of origin prematurely, are nonetheless viewed as being completely ineffective in their postings, with their overall assignments being considered ultimately as failures (Black and Gregersen, 1991; Copeland and Louis, 1985; Naumann, 1993).

The authors of *Global Assignments, Successfully Expatriating and Repatriating International Managers* (Black et al., 1992), devote an entire chapter to the issue of cross-cultural adjustment. Their discussion centers on the issue of 'culture shock.' This theme too was taken up by Oberg (1960), where he describes a process whereby a new culture is rejected in favour of a very positive review of, and desire for the familiar. Similarly, Hofstede (1983; 1980) reviews some of the significant differences in work-related values between cultures and their effect on global assignments. In this work, the idea of 'adjustment' remains broken into a number of different factors and subsequent measures. As might be expected, much of this early research in the field focuses on aspects of living, such as food, transportation systems, and daily customs. However, more recently, adjustment is filtered through a more complex paradigm, being defined and described by some as consisting of three very distinct but related factors (Black et al., 1992); adjustment to the job, adjustment to interacting with host-country nationals, and finally, adjustment to the general non-work environment.

Other research, with respect to adjustment, has further subdivided it into two main temporal sections. The first is called "anticipatory adjustment" (Black, Mendenhall, and Oddou, 1991) and refers to the expectations that the individual forms about the new culture and assignment. These expectations can be based on factual information such as knowledge acquired through reading and training, or through personal beliefs and wishes. It is generally conceived that the more accurate the expectational set, the smoother the adjustment will be. The second temporal section proposed by Black et al. (1991) is referred to as the 'post-arrival' or 'in-country factor' adjustment. Of importance here is the process that takes place when the expatriate actually arrives in the new country, again, particularly as it relates to the individual and his or her expectations. In essence, it is believed that the degree to which expectations are confirmed or disconfirmed, greatly impacts on adjustment. Louis (1980) addressed this issue for 'newcomers' in general, and described it as the difference between expectations and reality. Her theory suggested that negative surprises detracted from successful socialisation or adjustment. Both of these temporal sections are further subdivided into individual factors, job factors, organisational factors, and non-work factors.

What is evident in the literature is that there are numerous definitions and subsequent measures for the construct of 'adjustment.' It is important, therefore, to define the term in a way that incorporates many of the definitions previously used and studied, while at the same time lending

itself favourably to the specific purposes of this particular study. The following then is the specific definition of 'adjustment' utilised for this study: **Adjustment is the person's ability to function effectively, personally and vocationally, in the new environment.**

With very little exception, the majority of published research within this general domain has focused on individuals moving overseas for work with a parent company or on those who have been formally recruited by a home country organisation for an overseas assignment (for example, the Peace Corps or CIDA here in North America). The greatest percentage of this research would seem to involve primarily North Americans moving abroad to represent a multi-national parent company. The literature, then, does not adequately address the issue of how a specific sub-group, (namely teachers who resign from their current employment to accept overseas jobs), adjust to their new environments. Thus, this research is an attempt to address this quite apparent void.

INTRODUCTION TO PRESENT STUDY

The present study has been designed to measure adjustment in individuals who have willingly left employment in their home country to seek out opportunities within the educational sector in a foreign jurisdiction. Relying on the proposed definition of adjustment cited directly above, it will be necessary to measure personal attributes and examine their relationship to certain outcomes associated with subjects who have adjusted effectively to their new environment. Some literature (for example, Sayegh and Lasry, 1993) suggests that proper adjustment allows the individual to function optimally in the new environment. Reciprocally, successful adjustment should result in a general sense of well-being in both the world of work and in the private life of the individual.

Although flexibility and self-efficacy have long been known to play a significant role in education in general (Miller, 1997; Soodak and Podell, 1993; Woolfolk and Hoy, 1990; Zimmerman, 2000), and in the chemistry of the truly exceptional educator in particular (Allinder, 1994; Dewar, 2002; King and Peart, 1992; King, Warren, and Peart, 1988; Roy, 1987), their influence within the expatriate adjustment dynamic have also not gone unnoticed. For example, psychological flexibility and willingness to engage in unfamiliar activities have been found to be relevant to adjustment in expatriates (Mendenhall and Oddou, 1985). Trying new foods and engaging in different hobbies or sporting activities is often an expatriate necessity because the familiar is inaccessible. Hence, an attitude of open-mindedness would appear to play a significant role in moderating the stress sometimes associated with culture shock. Likewise, some authors (Black et al., 1992), quoting research by Mendenhall and Oddou (1985) and Hawes and Kealey (1981), imply that expatriates (individuals, spouses, and families) who are generally willing to make accommodations with respect to dealing with unfamiliar or different experiences are also the ones most likely to make the smoothest of transitions. Similarly, Caligiuri and Jacobs (1993) and Tung (1981) found that individuals who are open to new cultures, able to get along with people of different backgrounds, and capable of being effective in a variety of situations, ultimately, have the capacity to adjust much better. Tung (1981) formally referred to this capacity, or lack of it, as general psychological flexibility. In her study, she suggested that individuals with greater flexibility will adapt better to both work and non-work situations. Pronounced levels of flexibility, it is postulated, also serves to minimise culture shock in that individuals who possess this characteristic will experience more ease in behaving and thinking in new ways. It is also expected that flexible individuals will demonstrate less ethnocentricity and would demonstrate greater tolerance for ambiguity. Finally, Gentile, Halperin, and Cochran (1993) have also found flexibility to correlate in a significant manner with adjustment.

With direct reference to self-efficacy, Mendenhall and Oddou (1985) found that self-efficacy, as defined by Bandura (1977), (the belief that one can successfully perform a behaviour and the subsequent willingness to persevere in the face of adversity), is related to and functions as a predictor of adjustment. More specifically, it would appear that expatriates who are high in self-

efficacy are also the ones who are persistent in learning and imitating the appropriate behaviours of the host country, which then sets in motion a process that leads directly to adjustment. Consequently, these individuals are less likely to become discouraged when compared to those with low self-efficacy (Black et al., 1991). Black et al. (1992) and Black and Mendenhall (1990) addressed the issue of expatriate adjustment through the application of social learning theory (Bandura, 1977). This theory states that learning takes place through the use of four central elements: attention, retention, reproduction, and incentives. One of the main arguments of this theory is that gradual modelling of behaviour is more effective than modelling of only the final or target behaviour. Individuals with high self-esteem (Dowling and Schuler, 1990) and high self-efficacy are seen to persist in attempting to learn new behaviours when compared to those with low self-esteem and low self-efficacy. It is surmised that these same individuals will be more willing to change mental and behavioural patterns and, consequently, adjust successfully to their new environment.

In summary, in reviewing the literature, flexibility and self-efficacy would appear to assist, in a substantial way, expatriates in the overall adjustment process. Improved adjustment, in turn, should result in higher life satisfaction, greater job satisfaction, and decreased turnover intention. The following then, are the hypotheses investigated within the confines of this particular study.

The literature cited above has clearly demonstrated the importance of self-efficacy in the adjustment process of expatriates. Therefore, the first hypothesis suggests that **individuals with high self-efficacy will be better adjusted.**

Previous research has demonstrated that psychological flexibility leads to better adjustment in expatriates. Thus, the second hypothesis states that **individuals with more flexibility will be better adjusted.**

Studies have clearly demonstrated that adjusted individuals grow to not only enjoy their foreign assignments, thereby completing their overseas contracts, but are also more productive in the process. The third hypothesis then, suggests that **adjustment will predict job satisfaction.** Quite naturally, following on this, a fourth hypothesis states that **adjustment will predict turnover intention.**

The fifth hypothesis is predicated on the perceived permeability between life and work stress (Frone, Russell, and Cooper, 1992). In the context of the present study, this may play an even more significant role due to the fact that employees have, in most instances, left a job in their home country to join a new employer in their new country. This suggests that work and non-work adjustment would result in differing levels of well-being and life satisfaction. Thus, Hypothesis 5 states that **adjustment will predict overall life satisfaction.**

The final and sixth hypothesis is based on the idea that individual differences will predict adjustment and that adjustment, in turn, will predict certain outcomes. Adjustment is believed to act as a mediator between the two predictor variables and the three outcome variables. Hence, Hypothesis 6 states that **adjustment will mediate the relationship between the antecedent and outcome variables.**

METHOD

Procedure

Permission was sought and granted by the Ministry of Education and the Education Department of a small island Caribbean state, to survey all teachers employed by the host government in the public school system. In order to collect all information before expatriate employees would formalise their requests to renew or terminate their contracts in the following year, all data were

collected over a two week period in late fall. The questionnaires were distributed and collected by the authors directly. In total, 196 questionnaires were distributed. Of these, an effective sample of 184 usable and complete surveys were obtained for a return rate of 94 per cent.

Participants

The **sample** consisted of 56 expatriates from North America and the United Kingdom, and 128 teachers from other Caribbean countries. The mean age for the expatriates was the 40-49 year-old group. There were 56 males and 126 females with two missing responses. In order to ensure homogeneity of working conditions, the total sample consisted of only those individuals who spent more than 50 per cent of their working time in a teaching capacity which excluded most school administrators and support staff.

Measures

Self-Efficacy was measured with a series of 11 items, four of which were based on the work of Major and Kozlowski (1990) while the others were developed specifically for this study. A sample item is 'I have all the requisite skills and knowledge to do my job here.'

Flexibility was measured by a shortened version of the flexibility scale from the California Psychological Inventory (Gough, 1987). This test has a long history of use as a measure of normal personality traits. Highly flexible individuals are described as liking change and variety, and being easily bored by routine life (CPI Manual, 1987). A sample item is 'I think I am stricter about right and wrong than most people.'

Adjustment was measured with a scale developed for this project. It initially consisted of 20 items. These items were generated following interviews for a realistic job preview exercise (von Kirchenheim, 1992). A sample item is 'Although I do not necessarily agree with the politics, I accept the way things are done here.'

Job satisfaction was measured with a five-item scale similar to that used by Ostroff and Kozlowski (1992). A sample item is 'I am very dissatisfied with this job,' (reverse scored).

Turnover intention was based on a four-item scale. Three of the items were based on the scale used in the Ostroff and Kozlowski (1992) study. The other item addressed whether expatriate employees intended to renew their contract or terminate their employment with the government. A sample item from the scale is, 'In general, I intend to stay in this job for as long as possible.'

Life satisfaction was measured with the five item Satisfaction with Life Scale developed by Diener, Emmons, Larsen, and Griffin (1985). This scale was designed to measure global life satisfaction (Pavot and Diener, 1993). An item from this scale is 'I am satisfied with my life.'

RESULTS

Means, standard deviations, alpha coefficients, and intercorrelations among variables are presented in Table 1. The reliabilities for the scales were all acceptable. It should be noted that both the self-efficacy and adjustment scales required some modification before being included in the final analyses of this study as reliabilities were below acceptable levels (coefficient $\alpha < 0.60$). Consequently, exploratory principal components factor analyses with a varimax rotation of factors were performed, and the two scales shortened to bring the respective reliability to acceptable levels. As shown in Table 1, interestingly, the relationship between self-efficacy and flexibility is significant but negative ($r = -0.17, p < 0.05$).

Results support the first hypothesis, stating that self-efficacy would lead to higher levels of adjustment ($r = 0.27, p < 0.01$). This indicates that the greater one's sense of self-efficacy, the better one is likely to adjust.

Table 1. Descriptive statistics and correlation matrix

Variable	Mean	Std Dev	1	2	3	4	5	6
Eff	31.25	3.25	(0.67)					
Flex	25.23	4.97	-0.17*	(0.77)				
Adjust	39.08	5.91	0.27*	-0.09	(0.74)			
Life Sat	16.33	4.06	0.19*	-0.07	0.36*	(0.73)		
Job	18.24	4.36	0.26*	-0.04	0.53*	0.57*	(0.84)	
Turn	9.02	4.08	-0.22*	0.05	-0.53*	-0.36*	-0.70*	(0.82)

Note: * denotes all correlations that are significant at $p < 0.05$. Correlations with values $\Rightarrow 0.25$ are significant at $p > 0.001$. Coefficient alphas are reported in the diagonals, in parentheses. No alpha is available for previous Caribbean experience as this was not a scale.

No support was found for the second hypothesis, which predicted that individuals possessing more flexibility would be better adjusted ($r = -0.09$, $p = 0.208$). In fact, other than the negative relationship described above, flexibility did not correlate significantly with any of the other measures. A *post hoc* analysis was conducted to determine if there might be an interaction between flexibility and self-efficacy, but no significant effect was found.

The next set of hypotheses dealt with the outcomes of positive adjustment. Specifically, the third hypothesis stated that adjustment would be associated with increased job satisfaction. This hypothesis was supported ($r = 0.53$, $p < 0.01$). The fourth hypothesis, stating that adjustment would negatively correlate with turnover intentions was also supported ($r = -0.36$, $p < 0.01$). Similarly, the fifth hypothesis was supported, suggesting that overall life satisfaction would be associated with adjustment ($r = 0.36$, $p < 0.01$).

As depicted in Table 2, the next step was to use hierarchical multiple regression analysis (Cohen and Cohen, 1983) to test the overall model (Hypothesis 6), that adjustment would act as a mediator. As some significant relationship between the variables must exist in order to fit the proposed model, only those factors meeting the precondition of correlating at a significant level were retained at this step. This effectively eliminated flexibility from the equation.

Table 2. Hierarchical regression

Variables	Beta	R2	change in R2	F	p
Job Satisfaction					
Step 1: Self -Eff	0.257	0.066		12.96	0.0004
Step 2: Adjust.	0.499	0.297	0.231	59.62	0.0000
Life Satisfaction					
Step 1: Self -Eff	0.241	0.037		7.04	0.0087
Step 2: Adjust.	0.334	0.14	0.103	21.75	0.0000
Turnover Intention					
Step 1: Self -Eff	-0.221	0.05		9.35	0.0026
Step 2: Adjust.	-0.318	0.14	0.09	19.73	0.0000

Consequently, self-efficacy was entered at step 1, followed by adjustment at step 2. Separate regressions were performed for each of the three dependent variables; well-being, job satisfaction and turnover intention. Results, as presented in Table 2, indicate that significant effects were found for self-efficacy contributing to adjustment. Adjustment in turn, resulted in higher life satisfaction, increased job satisfaction and reduced turnover intention. In order to test for full mediation, however, a second step is required. In this analysis, the factors are entered into the equation in reverse order. Evidence of full mediation is provided if the predictive factors at step two now do not significantly add to the variance explained by adjustment. As can be seen in Table 3, for each of the dependent variables there is significant change at step 1 when adjustment is entered into the equation. However, the change at step 2 is not significant. Therefore, these results support the mediating role of adjustment.

Table 3. Hierarchical regression (reverse order)

Variables	Beta	R2	change in R2	F	p
Job Satisfaction					
Step 1: Self -Eff	0.532	0.283		72.13	0.0000
Step 2: Adjust.	0.122	0.297	0.014	3.60	0.059
Life Satisfaction					
Step 1: Self -Eff	0.361	0.131		27.37	0.0000
Step 2: Adjust.	0.102	0.141	0.009	2.06	0.153
Turnover Intention					
Step 1: Self -Eff	-0.354	0.125		26.10	0.0000
Step 2: Adjust.	-0.135	0.142	0.017	3.58	0.060

DISCUSSION

The purpose of this study was to investigate the adjustment process in a designated group of expatriates who have severed ties with their home country and employer. Based on existing literature, the value of self-efficacy and flexibility on the adjustment process was investigated. It was hypothesised that adjustment would result in reduced turnover intention, increased life satisfaction, and higher job satisfaction. Results revealed the significance of self-efficacy but failed to reveal a significant relationship between flexibility and adjustment.

A previous finding with employees of multi-national companies, which was replicated with this population of teachers, was the importance of self-efficacy in successful international assignments. A strong relationship was evidenced between self-efficacy and adjustment, as well as the three outcome variables. This suggests that measuring and utilising self-efficacy could significantly increase the success rate of international placements.

Without question, a surprising finding was that flexibility was without profound influence. Although this characteristic has been found to be predictive in other studies (Gentile et al., 1993; Tung, 1981), not so in this one. One very plausible explanation for this is that the measure used in this particular study was not appropriate for determining the type of flexibility required in this specific international setting. Restated, the Caribbean country studied, including its Education Department, is world renown for adhering to a very rigid set of standards which are overwhelmingly Christian based. Hence, deviation from the standard is very much discouraged. Consequently, within this particular international paradigm, it just may be that people, who are inflexible and less tolerant by nature, are better able to adjust to both their work and non-work environments. At minimum, this may be an interesting area for further study. Throughout the study, attempts were made to determine if flexibility may have an indirect role, such as serving as a conduit for self-efficacy, however, no substantial support was found for this through exploratory analysis. Inflexibility, on the other hand, may be of value and assist in the adjustment process within this particular international setting. This would fit with the Attraction-Selection-Attrition model developed by Schneider (1987) and recently reviewed (Schneider, Goldstein, and Smith, 1995). Again, further research is required to determine fully if the flexibility-inflexibility continuum is another dimension to consider within the international relocation process.

Limitations of Present Research

Clearly this study was conducted on a very homogeneous population. The subjects had relatively the same education, identical job descriptions, worked under very similar conditions, and lived in the same non-work environment. Consequently, it is difficult to make generalisations to other groups. It would be valuable to conduct similar studies not only with other organisational groups, but also in different geographical settings. Similarly, a design that does not rely solely on self-report would add considerably to the validity of the findings. This study also does not specifically measure whether or not expatriates were successful in their jobs as educators. It would also have

been helpful to have controlled for job tenure. As well, although acceptable for the purposes of this study, the reliability of the self-efficacy scale was somewhat low. The development of a more reliable measure, and the determination of whether self-efficacy is a one-dimensional or multidimensional factor for this population, would make a valuable contribution to future research endeavours.

Finally, although we noted, empirically, some subtle differences in the responses from foreign nationals from North America, the United Kingdom, and other countries in the Caribbean, we were prevented from formally/officially sorting and analysing these data in this particular way due to constraints placed on the survey design and analysis by the host country. As alluded to earlier, in our view, this might have some profound influence, particularly in getting a more accurate measurement within the flexibility domain, as many educators of Caribbean extraction come from countries which share a very similar heritage/tradition. As a result, future research will clearly match country of origin with specific response, which will, we believe, more significantly highlight the role played by both self-efficacy and flexibility in the adjustment experiences of expatriate teachers.

Practical Implications

Despite its limitations, as a result of this study, there are some clear implications for individuals and organisations involved in the expatriation process. Of paramount importance, would appear to be the issue of self-efficacy. From a personal point of view, those who score high on scales which measure self-efficacy would appear to be the ones most likely to find success within the international relocation process. From an organisational perspective, the accurate measurement of self-efficacy may provide valuable information to the employer regarding those applicants that have the greatest probability of adjustment. As has been previously demonstrated, maladjustment prevents even the most technically or professionally qualified employees from working to their potential.

When applicants are equally qualified, employers may be well-advised to evaluate and select those applicants demonstrating higher levels of self-efficacy. Moreover, organisations that recruit large numbers of expatriates or foreign employees to key positions may want to establish training programs to increase self-efficacy among their recruits. Given that this study looked exclusively at educators in its sampling, the implications for faculties of education, who are seeing increasing numbers of their graduates accept postings in foreign jurisdictions, are significant.

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FILM REVIEW

“Mona Lisa Smile”: More than a smile

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Popular culture influences every aspect of our daily lives as we listen to popular music, read the press, and watch television and even go to movies. The images portrayed in popular culture influences our perspectives of people, of places, and of cultures. Mitchell in *That's Funny You Don't look like a Teacher* (1995), suggested that images of teacher in the media influences the ways in which students and the public conceptualise what is it to be a teacher. Thus, critiquing images of teachers in films such as *Mona Lisa Smile* is of considerable importance. A critical review of *Mona Lisa Smile* is a place to open a dialogue about teachers' images in films.

The film opens in the socially conservative setting of the 1950's drawn from the experience of Katherine Watson, a teacher of art history who relocated from California to work at Wellesley College, a prestigious New England women's school, the screen play casts Julia Roberts as Watson.

Thus, the film embraces the ethos of the days in which young women in prestigious schools are expected to memorise course contents as they prepare to become exemplary mothers who oversee the education of their children, and wives-to-be for the nation's elite males. Following Purvis (1985), the ideas about the schooling of girls in that time were persistently influenced by the dominant ideologies regarding the role of women in wider society. The dominant ideal upheld by the middle classes for women was that of the good wife and mother, so girls were “offered a curriculum that would make them attractive in marriage market” (Purvis, 1991, p. 30).

However, Watson challenges the College's status quo and presents more liberal feminist ideas that are taken especially by three students, Elizabeth ('Betty') Warren (Kristen Dunst), Joan Brandwyn (Julia Stiles), and Giselle Levy (Maggie Gyllenhaal). Three girls who “had everything and she showed them more.” Their stories detailed below intertwine with Watson's eagerness to teach about life and choice.

Joan Brandwyn, a bright, enthusiastic young woman, is torn between her dream to become a lawyer and the social pressure for women her age to marry and have children. When Joan goes to discuss her “C” grade with Watson, the latter asks, “What is your plan after graduating?” “After I graduate, I plan on getting married,” Joan replies. Watson enthusiastically asks, “Just for fun, if you could go to any law school in the country which would it be?” “Yale,” Joan replies. Joan continues “They leave five slots open for women, one unofficially for a Wellesley girl.”

In contrast, Giselle Levy is a promiscuous woman, perhaps the most self-destructive of this group of women. She does not seem to confront Watson's ideas as Joan Brandwyn and Elizabeth 'Betty' Warren do.

Warren, a fragile, malicious gossip and the editorial writer for the school newspaper is the greatest opposition against Watson's feminist perspectives. Betty is an example of “many young women who look to marriage as a pot of gold at the rainbow's end” (French, 1990, p.9). The post war era, and the incompatible tides of progressive thought versus tradition, is reflected in the struggle between Watson's and Betty's tense discussions. As Watson encourages her students to take career-oriented goals, Betty faces the prevailing pressure on single woman to marry and have a

family. Betty is threatened by her feminist teacher's independence, which she confronts with social orthodoxy.

Watson, who comes from the Bohemian West Coast, is filled with liberal and feminist values and the nebulous aspiration to "make a difference," is challenged by the traditional view of the College's alumni. In the film, Watson seems to be "giving up" and avoiding struggle. She is reinforcing and further developing the limitations of female teacher potential. The College administration conditionally accepts Watson's return to teaching the following year on strict condition decided by the alumni and the college's administration. These conditions are that she teaches the syllabus as outlined by the staff and agrees to submit her lesson plans for approval. She is not to counsel students on anything but the subjects she is teaching, and is to maintain a strictly professional relationship with all members of the faculty.

The central characters of the film are complex and can be read in multiple ways. For instance, Giselle Levy's character behaviour can be looked as a promiscuous behaviour; it can be also interpreted as the 'feminist' in the film who control men with her body. Also, the teacher, Watson's character was reflecting two positions, a feminist teacher who refuses to fall for women's traditional educational objective, or merely a female teacher who obeys the traditions herself by being a teacher of art history.

These different readings of the films' characters reflect my position as an Arab woman, and as a feminist. While the film mirrors the social conservatism and the feminists' struggle in the 1950's in England, it exemplifies women's struggle in some Arab societies in the twentieth century. In my culture women are still told that the main purpose of their education is to be prepared for the role of a wife and a mother, and until recently girls are taken out of high school to start a family. My view, my enthusiasm, and my analysis of the film differ from that of my Canadian colleagues. As a woman who advocates women's right of choice in all aspects of life (i.e., marriage, educational attainment, and job), I believe that the film challenges the traditional objectives of woman's education which is to be a good mother and a good wife. The teacher, Watson, tried to encourage these three young women and tell them, that there are other possibilities in life worthwhile to fight for.

Mona Lisa Smile underlines the ways in which women's lives were shaped and limited by existing social structures, and examines the ways in which girls' attitudes are reproduced in a society still dominated by male hegemony. It also explores these young women's expectations as they graduate from College and the ways in which Betty and Joan approach the central problems in their personal lives. Betty's beliefs are challenged yet again, when her mother refuses to have her at her home because of the stigma of the divorced woman.

I view Watson's aspiration for a nuanced teaching method as reminiscent of Kathleen Weiler's views of feminist teaching as counter hegemonic, in *Women Teaching for Change: Gender, Class, and Power* (1988). Weiler argues that opposition to power in teaching is counter-hegemonic. In particular, Weiler refers to self-conscious analysis and the development of organised practices as key components that oppose the existing hegemonies' order. Weiler believed that encountering hegemonies would lead to a new base for societal transformation (Weiler, 1988, p.90).

Another connection I found in Magda Lewis' views, in *Without a Word Teaching Beyond Women's Silence*, when she eloquently suggests, "In the academy, those of us who teach from a feminist perspective know that the intense scrutiny of our teaching stands in stark contrast to the review of the teaching of those who instruct from social/political positions that do not challenge the status quo" (1993, p. 147). Indeed, the tension evident between Watson's teaching "views" and/or method and Wellesley's administration provides an example of what Lewis and other feminists in academia are evaluating namely, "the political and ethical parameters of teaching from a feminist standpoint" (Ibid, p. 148, Mohanty, 1991). In a similar vein, Ursula Kelly's (1997)

Schooling Desire, refers to “disarming femininities,” dominant schooling practices that are implicated in the production of specific forms.

The *Mona Lisa Smile* as a film tried to *superficially* challenge the status quo with a female teacher. Watson presents feminist pedagogy as a singular excluding any different points of view. On the contrary, Kelly, Lewis and others, including myself, view feminism in a pluralistic way. Feminist pedagogies’ premise is acknowledging difference and diversity in ways that enhance individual’s opportunities and not restrain them. At least, the film highlighted the objectives of women’s education in the 1950s, and namely, unfortunately, this still exists in some parts of the world. *Mona Lisa Smile* intended to empower women, but raised questions that have no easy answers. Though the film lacks character development and has a one-sided viewpoint of feminism represented by Watson’s image on housewives, it still presents a message of independence for young women. The film fails to include the struggle of working class women whose choices tend to be more restricted than those of middle-upper class women represented in the film. It also neglects the struggles of Blacks in the fifties with respect to racism.

Mona Lisa Smile allows us to examine the ways in which dominant popular culture of a society is a construction of reality that may represent or misrepresent real-life experiences. It is significant to review popular culture about teachers’ images and roles, especially those of feminist teachers, since the central character of the reviewed film is a woman. Watson’s portrayal in this film, as a teacher who refused to compromise her principles, is instructive to feminists in academia today. This follows the teacher images in films, stereotypes and Hollywood conventions of presenting teachers as dedicated, able to make connections, unsupported, eccentric, with wavering confidence (Rosen, 2004). Reviewing similar films about women teachers helps to comprehend the historic and contemporary constraints imposed on women teachers, and the teachers’ resistance in the contexts of dealing with alumni and/or administration (e.g., as in Watson’s story).

Although *Mona Lisa Smile* did not live up to the expectation and has many flaws with its theoretical base, it can bring the discussion of feminists and teachers back to stage. Consistent with Kaplan (1992) I agree that many, if not most, American films regarding teachers and educators “lacks distinction” (Weinstein, 1998, p. 39). Independently, films that portray teachers do not form a distinct type or genre. By most definitions, they belong somewhere in a subclass loosely labeled “social problem films” (Rosen, 2004, p.22). However, I agree with Rosen that all movies about teacher images and feminist teachers could be an encouragement for the dialogue to start not only about unrealistic teacher images, but also about a desire to reflect the ‘real’ schooling scenarios for female teachers.

As teachers, we need to acknowledge that “schools are sites of cultural politics organised through modes of semiotic production...thought of in this way, schools are set of social, textual and visual practices intended to provoke the production of meanings and desire that effects people’s sense of their future identities and possibilities”(Roger, 1992, p. 40). Thus, traditional schools’ ideologies including that of Wellesley College about women’s role in society, are affecting female students’ sense of their future identities as well as possibilities. As educators we can prepare the next generation of feminist teachers to be prominent leaders. Knowing the struggle of feminist teachers in literature throughout the past several decades teaches us to appreciate the current state of affairs and prepare strategies for the future. It is essential that educators believe we “should consider implementing more carefully structured critiques and deconstructions of socially constructed images of teachers, women teachers, and teaching practices, *“as well as carefully structured use of film images of teaching as an invitation to dialogue”* [Italics in the original] (Rosen, 2004, p. 25).

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