Journal of Educational Planning and Administration

Volume XXVII No. 2 April 2013

National University of
Educational Planning and Administration
17-B, Sri Aurobindo Marg, New Delhi 110016

ISSN 0971-3859

Annual Subscription

	Within India	*Outside India* (By Airmail)
Individuals	₹ 150	US $ 60
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Full Page	₹ 2000	US $ 100
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Bank draft may be sent to the Deputy Publication Officer, NUEPA in the name of the *National University of Educational Planning and Administration* payable at *New Delhi.*

Published by the Registrar, National University of Educational Planning and Administration, 17-B, Sri Aurobindo Marg, New Delhi–110016 and printed by the Publication Unit, NUEPA at M/s. Anil Offset & Packaging, New Delhi–110060.

JOURNAL OF
EDUCATIONAL PLANNING AND ADMINISTRATION
Vol. XXVII No. 2 (April 2013)

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Volume XXVII, No. 2, April 2013, pp. 141-155

Higher Education in and for a Changing World*

Karuna Chanana#

Abstract

Considerable claims are being made for higher education as an engine of social, economic and political change across the world. There is also counter discourse which questions the optimism of those who support the forces of change as represented by globalization. The first part of the paper focuses on globalization and knowledge society as the two main constructs of the contemporary discourse on change and education and critiques their impact on equity and access in higher education. Scholars are questioning the dependence of globalisation on techno sciences; or the close connection between managerialism and equity; the commodification of knowledge; re-ification of stratification of knowledge generated in the developed and less developed economies while pushing the local knowledge traditions into the margins. All of these have social and equity implications. In the second part, this theme is located within the discourse on higher education in India. Since the 1990s, most of the expansion in higher education has taken place in the `for-profit' private educational institutions and since profit is the central parametre defining educational priorities and choices, considerations of gender, marginality and caste are pushed to the background. It is argued, on the basis of access and participation of women, minorities and the SCs and STs, that expansion of education has not benefitted the students from these categories. Hence, the role of the State in promoting and pushing for change along with equality and equity through education becomes critical.

* Lecture delivered at the Annual Conference of the Comparative Education Society of India, Department of Education, University of Jammu, Jammu, October 11, 2012.

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Preamble

Considerable claims are being made for higher education as an engine of social, economic and political change across the world. There is also counter discourse which questions the optimism of those who support the forces of change as represented by globalization. The two main constructs of the contemporary discourse on change and education are globalization and knowledge society focus is on both these. The first part of the paper while locating this theme within the discourse on higher education, especially the Indian higher education system, will provide the context. The basic premise of this paper is that in order to push for change, education itself has to change — a process which is happening at a fast pace across the globe because the educational landscape is expanding. What follows from this is that the relationship between globalization and education is two-way and education cannot push for change without changing itself.

Looking at the history of sociology of education, one cannot think of any time when the social thinkers writing on modern education did not mention change or the contribution of education to change. Change and the functions of education were central to most of their writings. Just to mention a few names, for example, Emile Durkheim, Mannheim, Max Weber, Dewey, etc. They were all concerned about the economic, social and political changes wrought by the industrial revolution and the need for education to respond to them. Education, especially higher education, was seen as the engine of technological growth through skill training and generation of new knowledge, training of manpower as human capital, and to establish and nurture democratic values and promote social mobility. In other words, the functions of education were expected to change in a changing society. Education was to be a 'state capitalist enterprise', i.e., it was to be fully state supported which will enable the universities to retain their professional autonomy considered essential for reflective thinking and for the generation of new knowledge and discovery.

However, education has always been assigned contradictory roles. Its functions tend to be conflictual at times. For example, and as already mentioned, in the wake of industrialization in Western societies, it was expected to push for change and be the main instrument for promoting economic, political and social change. At the same time, it was also expected to instill values and attitudes necessary for maintaining a continuity with the past and the existing social institutions so as to avoid sudden rupture in the social life of the community. For example, at the level of the individual student in the school the values necessary for continuation of social institutions such as the family and society had to be instilled. And at the same time, the younger generation had to be equipped with the new technical skills and be prepared for the job market while getting accustomed to the social changes (Brennan and Naidoo 2006: 225). In other words, socialisation and formal education of the student had to be for change and continuity. Now, some of the traditional functions of education in industrial societies are again being redefined while the new ones are being added in the knowledge society. Education is expected to maintain a balance.

There is no doubt that the changes spearheaded by economic liberalization and globalization are impacting on higher education (HE) worldwide. The relationships between the governments and universities are changing all over the world. Yet the central proposition of the contemporary discourse on higher education, knowledge and globalisation that education can change the future of the world is under a critical gaze.

Additionally, around the time when India began to liberalise its economy in the early 1990s, it was argued by the international agencies and some scholars that higher education is a non-merit or a private good and the developing countries should not focus on its expansion. They should be concerned about primary education which was the public good. This argument reflected a stark reversal of the earlier position that higher education is a public good and should be fully state supported. As a result, more and more governments, including the democratic ones, began to take the stance that the entry or increased participation of the private sector in higher education is not only necessary but healthy for the growth and development of higher education.

So, the question was posed as 'either/or', instead of working in both directions. The Indian government also followed suit and declared higher education as a non-merit good. However, at a later stage there was a remarkable reversal in the global policy promoted by the international agencies such as the World Bank. It began to be argued that higher education is essential for developing countries to become part of the knowledge economy.

Globalisation

"Globalisation has multiple meanings and is manifested differently in different situations…. It takes different forms and looks different in different parts of the world or in different countries. There are also varied perspectives depending on the local and regional contexts" (Macdonell 2008**:** 145). Globalisation also means many things to many people. According to some, colonialism was globalization while others referred to modernization as globalisation. Here it is referred to as the process of economic liberalization in India since 1991 and its impact on higher education.

What is central to globalization is that the world has become increasingly interdependent and ever-closer — a process which started in the last quarter of the 20th century. Communication technology and the global economy have played an important role in this interdependence which is evident all over the globe and in all walks of life (Morris-Suzuki 2008:vii). It has changed the world into a global market and where the jobs are generated is not restricted by geographical boundaries. Macro-developments across the globe affect people at the micro level. Further, the direct nexus between the industry, corporate world and higher education has brought a transformation in the skills needed for jobs. For example, formation of intellectual capital, as a market commodity, is being viewed or projected as an indispensable instrument for a high-skills economy. Therefore, universities become the main sites for the production, dissemination and transfer of knowledge, innovation and technology. Public universities have been forced to downsize; and the language of efficiency and accountability associated with corporate management is being used to run and to evaluate universities. The most salient development is the rise of the for-profit private sector in higher education.

The push for allowing private higher education came from the thinking that the higher education system has become too large and unwieldy and the state could no longer provide funds for it. Second, there was a big question mark about the quality of education in the the state-run system. Further, those who were of the view that private sector can deliver began to push for private universities and colleges. Third, it was argued that competition between the public and private institutions will generally improve quality and efficiency. As a fall-out of this thinking, there has been a fall in state funding of higher education across the world

along with tighter control of academic life in order to improve quality for which quality assurance bodies have been set up.

This thinking reinforced changes in the role of education, viz., to harness universities for economic productivity and for knowledge production. Higher education and knowledge produced through it, is also being viewed as a commodity for which a price has to be paid if one wants to buy it. This explains the rise of the private universities and colleges providing self-funded education around the world and in India. The state is no longer viewed as the sole provider of education which has led to a global move away from the traditional forms of funding and regulation according to which it was the sole responsibility of the state to provide funds for higher education. Earlier, there seemed to be a 'social compact' (Brennan and Naidoo: 223) between the state and society to provide for education for all (Slaughter and Leslie 1997). That social compact has broken down. There is also a drastic change in the thinking of the government that higher education should be autonomous and independent from political and corporate influence which was based on the assumption that full state funding will provide professional autonomy to universities. Therefore, new funding and regulatory frameworks are being evolved as a result of the influence of neo-liberal market-oriented mechanisms. At the level of the institutions or at the micro level it means that the higher educational institutions should be financially self-sufficient, thereby forcing the government institutions to cut down on the cost and to think of ways and means to raise funds. One of the easiest ways is to ask the students to finance their own education giving rise to a surfeit of banks providing loans to students. The second is to push the academic community into raising funds for their research and for the university. Third, the faculty in the state-run universities are either not being recruited or are being recruited on contractual and temporary basis. Fourth, to introduce academic subjects with high market demand.

Slaughter and Leslie call this as 'academic capitalism' which they define as "any institutional and professional market or market-like [sic] efforts to secure external moneys" (1997:8). The emergence of academic capitalism is examined by tracing "the growth of global markets, the development of national policies that target faculty-applied research, the decline of the block grant as a vehicle for state support for higher education, and the accompanying increase in faculty engagement with the market" (1997:11). They refer to "Entrepreneurial Knowledge," and the work of applied scientists as entrepreneurial. Faculties have had to change their conception of knowledge and become academic capitalists. Thus, there has been a change in the perception of the role of the faculty to become instrumental in establishing links with the market and industry and had to acknowledge the economic value of knowledge and its indispensability in raising funds for the universities to pursue research and other activities. Profit and competition became central to this ethos and professors were pushed into this competitive arena. At stake was their survival in the university system. So the nature of academic work and the faculty role changed in response to global markets.

However, the *process of globalisation is complex and generates contradictions and conflicts*. It has become one of the most pressing challenges in the contemporary world. While communication technology in the global world is increasing interdependence — economic, social, intellectual and political — it is also heightening divisions of ethnicity, region, class, caste and religion, and also along national and sub-national lines (Morris-Suzuki 2008: vii; McDonnell 2008:146). Therefore, how should we assess the role of education in change in a world which is still divided along local, regional and national lines

especially, in a situation of simultaneous convergence and divergence. While globalisation has increased opportunities and benefits, it also raises serious concerns about cultural identity, social justice and equity. While the higher education system has suffered precipitous decline in state support, the self-funded academic programmes have given rise to debt-ridden graduates and contingent faculty.

Knowledge Society

Along with globalization, scholars have also been re-examining the assumptions underlying the discourse around the knowledge society. Some of the questions raised about knowledge in contemporary society are reminiscent of those raised by the 'new sociologists' in the 1970s. They had asked questions about the universality of knowledge, its control and dissemination in the hands of the few and for a few. Later, feminist scholars raised similar questions. These questions are being raised anew.

According to Weiler "The invocation of the notion of a "knowledge society" has become ubiquitous. Among its many dangers is that it creates the illusion that we know what we are talking about when we talk about "knowledge". He claims that, "when it comes to knowledge, we do *not* know what we are talking about" (2006:61) He asks three questions in the context of the knowledge society: what is knowledge? What are the political consequences of its production and use? Who determines what knowledge is 'valued'? (Neave 2006:18)

Further, scholars (Houtondji: 2006) contend that knowledge society is divided into the developed and developing world, the former creates the knowledge and the latter receives the knowledge created in the developed world. This is reminiscent of Edward Shils' division into the centre and the periphery (Neave 2006:16) in the colonial society which hegemonised knowledge created in the western societies. This framework was an indicator of marginalisation of local intellectual traditions. It focussed exclusively on the western colonial and developed societies as the centre and the knowledge created by them. Universities in the rest of the world were characterised as being on the periphery. Neave goes to the extent of saying that change vis-a-vis the construction of what is knowledge that is being witnessed today is hardly different from what was seen in the colonial and industrial societies. In fact, he argues further that there is no universal knowledge and the so-called universal knowledge marginalises the indigenous or alternative knowledge traditions as was done in the colonial societies and also in the industrial societies. (2006:20). The universal categories denied a place to local social constructs and culture. To quote Neave, "this is no small form of expropriation, and no little exclusion. Assimilating, ostracising or forcing alternative traditions of local knowledge into inner exile effectively evacuates meaning and value from the social structures and communities that produce them" (2006:17). However, now there is evidence of a movement for re-instating the primacy of local identities, knowledge and traditions (Adeoti 2006).

Another argument against globalisation and universality of knowledge in the contemporary context is given by Brennan and Naidoo. They argue that universal knowledge may come in conflict with knowledge which is relevant to the national and local contexts (2006:228). Further, universities are located in national contexts which are experiencing economic, social and political change, each one different from the other. Further, the universities do not merely react to change but also respond and contribute to change. It is because of the interaction of global and local forces which puts pressure on universities to

react to change and meet its demands for the benefit of their own society and for the university community. In addition, the global and local forces also create contradictory situations for the university and for knowledge production. But this conflict is being managed by the differentiation of institutional functions. In other words, different sets of institutions are catering to the elite and the masses performing different functions. This reminds us of Trow's division of institutions into elite and mass education which will be taken up later.

Additionally, there is no level playing field in the production of knowledge, what is it used for and by whom? According to Neave, "If there is somewhere a 'level playing field' in which each individual, community or nation may compete on equal terms with its neighbours – ... – It is at present surrounded by high mountains and deep crevasses, both in its formal knowledge infrastructures and in terms of those having access to it" (2006 17). This point is substantiated here by looking at the participation of women vis-à-vis their subject choices, access of minorities and the disadvantaged in India's system of higher education although such disparities are present across nations and within nations.

Equity and Access in the Context of Globalisation

Social transformation or change presumes some fundamental changes in the political, social and economic institutions of society with a positive impact on the relationships between social groups, classes or strata and the distribution of wealth, power and status. However, doubts have been expressed by leading scholars in the field of education. Brown, Lauder and Ashton (2011:3) in their book entitled, *The Global Auction: The Broken Promises of Education, Jobs and Incomes,* say that 'the changing economic world evokes at once a sense of admiration and foreboding'. Clearly, globalisation has not made, and will not make, the world homogeneous' (McDonell 2008: 146). Bowles and Gintis express misgiving and skepticism about the impact of globalization and the equation of knowledge as a commodity when they say, "Today, no less than during the stormy days when Schooling in Capitalist America was written, schools express the conflicts and limitations, as well as the hopes of a heterogeneous and unequal society. Schools continue to be both testing grounds and battlegrounds for building a society that extends its freedoms and material benefits to all." (2002:15)

According to McKinnon and Brooks (2001) the social movements which represent civil society have been questioning the dominance of technology in higher education. They also question the formulation of research agendas around the new technologies and at the marginalisation of social issues and the social policy research areas in which the disadvantaged groups, the marginalised, the minorities and women academic staff and students are generally disproportionately located.

Additionally, globalisation is accompanied by an increased focus on techno sciences which have social and equity implications because the disadvantaged groups, the marginalised, the minorities and women are less likely to be involved in those areas which are frontrunners in the new economy and the market; they are also likely to be at the lower levels; they may also be unable to adjust to the time-space compression that IT demands or fosters (Harvey 1993). Those who are located in the more reflective areas and those who can quickly respond to the call of the market will react differently to these changes.

Moreover, the issue of compatibility between managerialism and equity (Sawer 1989; Yeatman 1990) has also been debated. It is argued that contemporary changes have an impact on pursuing equity issues within the universities because "a commitment to equity and a commitment to cost-cutting" (Bacchi 2001: 120) may not go hand-in-hand. Further, there is tension between promoting a social and democratic ideology, on the one hand and market ideology, on the other. This situation is again a reminder that universities have always contained many contradictions at a single point of time or over several points of time (Brennan and Naidoo 2006:226).

These contradictions can also be viewed as multiple roles which resist as well as draw on global and national forces which simultaneously push for change and also play a reproductive role. An important point is that at the systemic level, differentiation among universities and higher education institutions has become common, for example, there are open or distance education universities, private universities, state universities and other kinds of institutions (such as deemed universities in India), functioning at the same time in many countries. Each of them plays a specific role. Some of them are catering to the elite students while the others are accessed by the masses. Martin Trow's well known distinction between the elite and mass higher education (1974) saw these states as largely sequential or conversion of the former into the latter. Although he saw the possibility of them running in parallel, i.e., elite and mass higher education co-existing in the same society, his framework was based on the former premise. However, it is the latter situation which is characteristic of contemporary society (Brennan and Naidoo 2006:221-33).

This differentiation and variation is also reflected in the academic programmes that are on offer in higher education, for example, there are academic and vocational programmes, applied and market driven professional subjects and those in humanities, social sciences and pure sciences. Internationalization of higher education is also leading to differentiation of higher education. Those parents who can afford expensive education send their children abroad for higher education. Therefore, institutional and subject differentiation is happening along with the diversification of the students in terms of their social composition. These two processes of institutional differentiation among institutions and diversification of students, "allow higher education in the context of change to perform contradictory social functions, namely, help maintain the status and position of social elites while providing some opportunities for social mobility" (Brennan and Naidoo: 229). This is again reminiscent of what has been said long back by Bourdieu when he expostulated the main contribution of education to the systemic reproduction with very limited contribution to change.

Change, Globalization and the Indian Higher Education System

So far as the Indian higher education system is concerned, except for the last few years or in the XIth plan when the government decided to expand the public sector HE, most of the expansion since the early 1990s in the number of institutions and in professional subjects or the male dominated subjects such as engineering, technology, ICT, etc., has been in the private sector.

This development is also linked to the self-financing/self-funded courses which are primarily market driven professional ones and are offered both in the public and private institutions — both are costly but those in the private institutions are much more expensive

than those in the public colleges and universities. But both can deny access to the students, especially those from lower and the middle strata due to high cost.[1]

Additionally, the market demand has impacted the stratification of disciplines or subjects leading to the devaluation of arts, humanities, social sciences. Traditionally, underprivileged students and women have entered arts, humanities, social sciences which is a continuing trend. These are also referred to as the feminine subjects. These developments affect students from all the categories under consideration. How are the new developments in the market, its direct impact on the curriculum and higher tuition fees impacting the subject choices of students from these social groups and women students?

Another development is the privatisation of public universities which has two aspects that are likely to affect all the students under consideration. The first relates to the higher tuition fee in the self-financing courses mentioned above and leads to the second aspect, i.e., which parents are able to and are willing to spend higher costs on the education of their children, sons as well as daughters. Those who do, who are they, i.e., which strata of society do they come from?

Access: the Indian Situation

As already mentioned, a very important function of higher education system in social change is to assess the extent of educational opportunities for the disadvantaged groups, the minorities and women. This is a very critical question but is hampered by lack of reliable data. For example, although enrolments in Indian higher education have increased substantially and the student community is diversified, we do not know very much about the social outcomes. Further, we hardly know about the distribution of students from different social groups among the increasingly diversified institutional contexts and new professional and market oriented subjects.

In the last decade, there has been much concern about extending and expanding access to minority groups and Other Backward Castes (OBCs) in addition to the SCs and STs. In view of this, even though India has diversified its higher education system and has, to some extent, implemented widening participation and access initiatives for the disadvantaged and the minorities, its student population has not dramatically changed in composition.

Although there is lack of extensive and reliable database on higher education in India, disaggregated analysis of available enrolment statistics shows continuing inequalities. This is mainly because the number of state universities and colleges is declining since the early 1990s because state support to higher education has been decreasing. Simultaneously, the tuition fees are also increasing in the private sector as well as in the state sector in the name of self-funded academic programmes and subjects. The disadvantaged, the minority and women students have to compete for a few relatively inexpensive seats in state-run system, or they should be ready to shell out the high cost of private higher education. There is no need to emphasize that direct high cost is a barrier to access, not to mention the indirect costs.

[1] Provision of financial support and scholarships including coaching and tuition fees is required to enable the entry of students from the disadvantaged sections and of women to these courses and institutions.

Moreover, the new developments have led to the devaluation of disciplines which have been the choice of women, minorities and those from the disadvantaged social groups. It is quite common to hear these days that academic administrators ask the question: why should institutions offer history or sociology or the languages?

Look at the access and participation of women, minorities especially, Muslims and SC/STs[2] in higher education in India. While access is limited to enrolment, participation refers to what happens after the students enter HEIs, i.e., what do they do after admission, namely, do they transit to higher levels; which subjects and specializations do they choose? There can be many other aspects but the nature of the available data puts limits on the analysis.

While choosing to focus on the Muslims, among minorities, in 1993 (Chanana), it was argued that they were an apt example of an educationally backward religious community. This position was taken much before the Sachar Committee report in 2006. The 64th NSSO round conducted from July 2007 to June 2008 has also confirmed that Muslims are educationally backward among other minorities. Additionally, this paper also looks at the intersection of gender with caste/tribe and religion. It may also be added that while these categories are being referred to as if they were uniform; in reality, it is not so. There are sub-groups among them who have done well but a large majority are still excluded from the benefits of higher education.

Women in Higher Education

The two sources on statistics on higher education in India are: the *Annual Reports* of the University Grants Commission and the *Selected Educational Statistics* (SES) published by the Ministry of Human Resource Development.[3] However, both the reports do not give percentages or proportions of different categories in enrolment. Further, while the subjects have proliferated, in reality, theses two sources divide them into a few outdated categories. These are critical limitations.

In 2009-10[4], there were 436 universities and 25,938 colleges.[5] The gross enrolment ratio was very low at 15.0 per cent for all students: 17.1 for men and 12.7 for women (India 2011: HE2).[6] Indications are that it is higher both for women and men in states with private professional colleges.

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[2] The current nomenclature in use for SC is Dalit (exploited) and for ST is Adivasi (original inhabitant).

[3] The first source gives minimal statistics, namely, one table on enrolment in higher education by gender, level and subject. The second source provides a little more detailed statistics by gender, caste/tribe, state, as also gender parity index, gross enrolment ratio etc. It also gives some information on enrolment in distance education. It is not necessary that the figures from both the sources will tally.

[4] The UGC annual report for 2010–11 is available online. The SES is available for the year 2009-10. This paper will be mostly using the latter report which provides more extensive data. For subject-wise distribution, UGC 2009-10 report will be used for the sake of compatibility.

[5] In 2010-11, there were 523 universities and 33,023 colleges (out of these 3,982 were women's colleges) and 817,000 teachers (UGC 2011:44, 50).

[6] Recently, the Minister announced that it is 20 per cent on the basis of the preliminary findings of a survey which is underway by the NUEPA.

At first glance, there is positive change so far as access and participation are concerned since the numbers have increased generally. In this expansion, all the categories under consideration have gained. Women in general and women from specific categories have also gained. But then how do they fare when looked at separately and at disaggregated level?

As per the SES 2009-10, the total enrolment excluding the open universities, is 172,95,086 (India 2011:HE10), of which women form 41.9% (69,69,850).[7] Women comprise 41.6 per cent at undergraduate, 43.9 at graduate and 40.6 per cent at research level (India 2011: HE3-10). In addition, 34,45,654 students were enrolled in distance education of which 38.5 per cent (13,26,290) were women (India 2011: HE16).[8] Thus, the total enrolment including open universities is 207,40,740 (women 40.0).

According to the UGC Annual Report 2009-10, the maximum proportion of women (45.2 per cent) still enroll for arts, humanities and social sciences, followed closely by sciences (43.0) in which it has been increasing due to the devaluation of pure sciences because it is no longer the first choice of men students (Chanana 2006). Again, there has been a gradual increase in women's enrolment in the traditionally male dominated professional subjects such as commerce (37.1 per cent) and engineering (31%), yet they are not more than men in any of these fields, except teacher education (61.5). Their proportions are still low in agriculture (20.4), veterinary science (20.8) and law (24.6). The last three subjects still remain predominantly male domains with women occupying only about 20 per cent seats. Medicine in India has always been preferred by women so that secluded women patients could be treated by women doctors and so this subject stands between the boundaries of feminine and masculine subjects. Therefore, the enrolment of women in medicine, though a professional subject, is 46.5 per cent.

However, gender inequality in participation has declined very little, e.g., in enrolment, men are over-represented in physical, mathematical and computer sciences and women in biological sciences both in the educational and occupational spheres (Chanana 2006). This is also reflected in the choice of sub-fields or specializations. This is confirmed by a report on completed Ph.Ds.

In a latest report on 114,188 Ph.Ds. awarded between 1998-2007, one-third were awarded to women (Kurup & Arora 2010).[9] In all, information was collected from 216 Ph.D. granting institutions which were 42.3% of the existing institutions [511]. The total number

[7] As per the UGC Annual Report 2010-11, Women comprised 41.5 per cent of total enrolment of 169,75,000 students in 2010-11. The enrolment statistics exclude students enrolled in polytechnics and Industrial Training Institutes, which grant post secondary diplomas and certificates and not degrees.

[8] Thus, the total enrolment is 207,40,740, including distance education, with women comprising 40%.

[9] This report is based on the total number of Ph.Ds. recorded by INFLIBNET from 1998-2007. INFLIBNET is set up by UGC for sharing of library and information resources and services among universities and research institutions in the country. In addition, information on engineering, medicine and agriculture was collected from the relevant agencies such as the All India Council of Technical Education (AICTE), Medical Council of India (MCI), Indian Council of Agricultural Research (ICAR) along with information from premier institutions such as the Indian Institutes of Technology (IITs), Indian Institute of Science (IISc), National Institutes of Technology (NITs) and other technical, agricultural and non-agricultural universities.

of records which were analyzed are 45,561 which cover 39.9% of the Ph.Ds. reported by UGC up to 2005. It provides information by discipline or subject, gender and state.

Out of 45,561 doctorates under discussion, women were 33.6% and men 66.4 per cent. During the period under review, the proportion of women varied from 33.9% in 1998 to 35.1% in 2007. There is subject-wise variation, for example, 42.1% in humanities; 37.1% in the social sciences; 36.1% in medicine; 32.8% in the natural sciences; 24.1% in agriculture and 20.2% in engineering and technology. It records with concern that there has been a major decline in the Ph.Ds. awarded to women in medicine from 40.2% to 31.7 per cent.[10]

It also provides information by sub-disciplines or specializations and gender which demonstrates the horizontal segregation which is replacing the vertical segregation by gender (Chanana 2012). For example, in agriculture, the maximum percentage of women were in agro-chemistry [40.7%], agro-engineering and technology [36%]; and agro-social sciences [32%] while the least proportion of women were in animal studies [18%], plant studies [21.9%] and agriculture [21.5%].

The trends are the same in all other subjects where women are concentrated in a few sub-disciplines or specializations. As for example in the natural sciences 55.9% women are in life sciences followed by zoology [40.1%], botany [39.4%], and biology [38.9%]. They are least in geology with 13%. In engineering and technology, the maximum percentage of 45.6% are in bio-science engineering and the least in mechanical engineering [3.9%], civil engineering [12.6%] and metallurgical and material engineering [13.4%]. The situation is similar in social sciences where women are a large majority in home economics and family living [85.2]; 48.8 in Anthropology, 41.8 in sociology; and least in law (25.5) and management studies (22.4). In humanities, the maximum proportions are in psychology 58.4 and music 57.0 and least in geography 29.1 and religion 26.6 per cent.

Even in medicine, specializations are differentiated in terms of status. In other words, disparities across subjects are being replaced by disparities within specialization through the process of simultaneous inclusion and exclusion. "Inclusion and exclusion both appear to pose dangers and opportunities. Women are simultaneously constructed as winners and losers. Winners because they are gaining access, as students, in significant numbers, but losers because of their lack of entitlement to leadership and prestigious disciplines." (Morley 2009: 384)

Scheduled Castes and Scheduled Tribes

In 2009-10, the proportion of scheduled caste students out of all enrolled students in higher education was 11.8%: 7.3% men; and 4.5% women. The scheduled tribes comprised 5.2% of total enrolment: 3.3 % men; 1.9 % women. The gross enrolment ratio of scheduled castes was 11.1 per cent and of scheduled tribes 10.3 % as compared to 15.0 % for all students. The GER of scheduled caste women was 9.0 and for men 13.0; scheduled tribe women 7.5 and scheduled tribe men 13.1 per cent (India 2011: HE17).

For Ph.D., the figures are quite revealing. In 2009-10, a total of 92,211 students were enrolled for it. Out of these, 40.6 % (37,436) were women. Again, the number of SC students was 9,119 (9.9), of which 3,666 (4.0) were women and 5,453 (5.9) were men. The ST

[10] This decline may be due to lower number of records in that subject. It is also likely that while a large number of women take up medicine, they may not be doing Ph.D. This needs further research.

students were even less with a number of 3,865 (4.2%)--1,594 (1.7%) women and 2,271 (2.5%) men.

These figures substantiate the well known fact that in spite of a very well formulated policy of positive discrimination[11], the representation of the disadvantaged groups of Scheduled Caste (SC) and Scheduled Tribe (ST) students is not adequate and the proportion of women from among them is negligible. Access is very limited to them as a whole but more so to women from these groups. For instance, SC and ST women comprised 11.4 and 4.2 per cent respectively of all women enrolled in 2009-10 (India2011: HE12,14).

Muslims in Higher Education

The report of the Sachar Committee (constituted in March 2005), entitled *Social, Economic and Educational Status of the Muslim Community of India*, looks at the overall situation of the Muslims in India (India 2006).[12] It used the NSSO and Census data. In addition, it collected information on higher education from premier institutes such as IIMs, IITs, universities and colleges.[13] It differentiates between the Muslim Other Backward Castes (OBCs) and the high caste and well-off sections of the community. It provides some analysis by gender and also looks at the intersection of caste, gender, religion. Overall, it observed that this community was generally backward in education and required a special push.

About IIMs, it observed that about one in three Muslim applicants is selected and their success rate was better than others.[14]. Yet, Muslim students comprised only 1.3% of the students in all IIMs [63/4743]. Similarly, the proportion of Muslim students in IITs was low at 3.9% [894/27,161]. The proportion was 1.7% in the undergraduate courses, which are the most important in these institutes. At the postgraduate level, they were around 4% and even better at the Ph.D., level. It is likely that either fewer Muslim candidates sit for IIT entrance examinations or do not get through the entrance examination.

So far as the select premier colleges of arts, science, and commerce were concerned, the share of Muslims was low in all courses and they were marginal in the science stream. Their proportion was one in 25 enrolled students at the undergraduate level and one in 50 enrolled students at the postgraduate level. However, at the undergraduate level, the ratio of

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11 The untouchable castes or Scheduled Castes (now also referred to as Dalits or the oppressed) and the tribes (also referred to as the Scheduled Tribes) were provided Constitutional protection through reservation of seats in all public educational and occupational organizations. The reservation for SCs is 15.0, for STs 7.5 per cent. From 2009, 27 per cent seats have been reserved for the other backward castes or OBCs.

12 It has based its findings, by and large, on the National Sample Survey Organisation (NSSO) data. Sometimes it has used 2001 census statistics as well. It also asked for and collected information from HEIs to see the participation of Muslims in elite programmes and institutions. These were: Indian Institutes of Management (IIMs), Indian Institutes of Technology (IITs), select colleges of arts, sciences and commerce (for information on management courses offered in these colleges) and the top medical colleges.

13 In all, 129 universities and 80 colleges also provided relevant information [out of 300 universities and over 16,000 colleges].

14 From the IIMs, the committee collected enrolment statistics for the years 2004-05 and 2005-06. It was provided with data on the number of Muslims who were called for interview and those who were selected.

Muslim women is higher than that of men but it falls at the PG level except in the arts programmes.

The percentage of Muslims in management programmes [MBA] other than the IIMs was just 1% both for women and men. Furthermore, the proportion was just about 4% in the top medical colleges at the undergraduate level where they were enrolled in MBBS, dental and nursing programmes. In the medical colleges, except for PG diploma courses, the percentage of Muslim girls is lower than that of boys in all the courses.

In addition, 129 universities and 80 colleges also provided relevant information[15] [out of 300 universities and over 16,000 colleges]. Muslims were 9% at the UG level which is lower than their proportion in the population and significantly lower than the SCs/STs and OBCs. Their participation was particularly low in engineering and medical courses. They were also low in PG courses, e.g., only one out of 20 (5%) is a Muslim, compared to 24% OBCs and 13% SCs/STs.

Wrapping Up

There is no doubt that access has increased for all and it also gets reflected in the higher enrolment, GER, number of HEIs, and preferences for new professional subjects which are applied and market driven. However, the desegregated data presents a different picture. For instance, the gaps by caste, religion and gender continue and in some cases have widened. There is also a close relationship between caste, gender and religious community, on the one hand, and choice of subjects, level of education and the type of institution, on the other. Their proportions decrease as one moves from the undergraduate to the postgraduate and doctoral levels. This indicates lower transition rates and lower participation. Their participation in the most preferred subjects and elite HEIs is very low or marginal. Moreover, specialisations are replacing subjects in terms of concentration of specific students. Therefore, and as mentioned above, while the **vertical dimension of unequal participation** may be declining (e.g. the proportion of women in engineering and science or the fields of study), the **horizontal dimension** relating to specialisation may remain resistant to change. Layers of disadvantage are uncovered when data are disaggregated by ethnicity, gender, caste, etc.

As mentioned earlier, the government revisited its position on supporting higher education in the XIth plan and established new HEIs. However, most of the expansion has taken place in the private sector — institution-wise, enrolment-wise and subject-wise. While the private for profit sector has remapped the educational arena and increased the options for the students, it is very expensive and is beyond the reach of the categories under discussion. Again, quality in these HEIs, barring a few, is also suspect.

In this scenario, education has once again been projected as a critical instrument of social change as well as for cultural reproduction. Classic sociological questions about the relationship between education, on the one hand, and economy and society, on the other, are being raised again. One wonders how much of the repositioning of education is change and how much is the reaffirmation of the earlier position.

15 The all India statistics showed that there were 11.7 million enrolled students at the undergraduate level and 4.3 million at the postgraduate level. This sample was 11% of the UG and 38% of PG students; together it was 19% of the total enrolment.

This brings us to the question: how serious is the state about the role of higher education in promoting change and equality in the age of globalisation and privatisation? This is especially so when global changes are being viewed as gendered, racialized and classed. Again, when profit is the central parametre defining educational priorities and choices, considerations of gender, marginality, race, caste, class, ethnicity are less likely to remain in the foreground but for political compulsions (Brine 1990). Hence, the role of the state in promoting and pushing for change along with equality and equity through education becomes critical. Balancing the two aims becomes the litmus test along with evolving a cogent and comprehensive vision, approach and plan towards the systemic expansion of higher education.

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ISSN 0004-4555

The Asian Economic Review

Journal of the Indian Institute of Economics

Volume 54 December 2012 No.3

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Journal of Educational Planning and Administration
Volume XXVII, No. 2, April 2013, pp. 157-168

A Study of Effectiveness of Computer Assisted Instruction, Programme Instruction and Interactive Instruction on Students' Performance

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Abstract

This study compares the relative effectiveness of three individualized instructions in Chemistry. A pre–test and post–test randomized group design within experimental method was used, on a sample of 40 students of 11th standard of chemistry discipline, selected from one of the senior secondary schools of Rajasthan state where the experiment has been conducted. The group formation was done by administering General Intelligence Test and Socio-Economic Status Scale, the average students on the basis of normal distribution, which were common in both tests. Students of three experimental groups were subjected to treatment using Computer Assisted Instruction; Programmed Instruction; and Interactive Instruction respectively while students of control group were taught using the traditional method. Chemistry Achievement Test used as pre-test and post–test was administrated to all four groups before giving and after the instruction respectively. The data was analyzed using t–test, one way Analysis of Variance (ANOVA) and correlation by Pearson's Product Moment Method. The study concluded that the performance of students in chemistry achievement test regarding the use of individualized instruction were much better than conventional method of teaching yet there was no significant difference among the experimental groups after treatment.

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Introduction

Modern time is the era of technological advancement; hence, it is essential to apply it in education also. Technology in education can be conceived as a science of techniques and methods by which educational goal can be realized. It is not primarily concerned with the task of prescribing the goals. It is a science on the basis of which various strategies and approaches could be designed for the realization of goals related to a specific discipline. The process of teaching then, in the frame of reference, involves arranging for the inputs and designing of the situation or process through which a student learns to perform in a desired or specific manner. A teacher organizes his activities of teaching to bring about the desirable change in the behaviour of the learner. The teaching strategies are selected to achieve maximum student performance. Therefore, it is essential to know about different teaching strategies in term of their effectiveness in achieving different kinds of learning objectives. These are means for realizing the learning objectives.

Teaching methods need to be improved and appropriate teaching strategies employed as the teaching-learning situation may demand. There are various teaching methods, to understand different topics in science: the teaching approaches may be differing depending on the complexity and structure of the topics. Teachers should be concerned with use of variety of methods and procedures. The most enjoyable aspect of teaching and learning can occur when a variety of teaching methods are used.

Individualized instruction includes those forms of teaching in which instruction takes place on an individual rather than on group basis. It recognizes and provides a unique manner for each individual learner. Psychology reveals that no two individuals are alike. A class is a cluster of students of different capabilities, interest and aptitude and, of course, from varying backgrounds. There are fast learners as well as slow learners. Some can read and learn for hours together, while others get easily fed up due to their social and cultural background and physiological factors. Their cognitive and psychomotor skills too vary; so, individualized instruction can be of great help to meet these needs the students.

In a study of CAI in a secondary science classroom, Brophy (1999) of indicated that CAI is effective in science classroom settings. Tseng (1999) found that in mathematics, CAI was useful in teaching first grade students. In a similar study involving elementary students, Chang (2000) reported a significant increase in scores on a measure of academic achievement when CAI on arithmetic was used to teach addition and subtraction. Stern and Repa (2000) too showed that CAI was successfully used to teach social skills to teens enrolled in a behaviour modification programme.

Kulkarni and Dewan (1997) tried to apply the principles of programmed learning to television lessons. The TV programmed presentation enabled the students to score much higher. Colbum (2005) compared the success of Programme Learning (PI) with conventional teaching approach and also concluded that Programmed instruction method is more effective than demonstration method. N. Izzet Kurbanozul et al. (2006) compared the success of programmed instruction with the conventional teaching approach. They found that programmed learning could be considered as a better alternative to conventional lecturing in teaching stereo-chemistry.

Anurdha Sukla (2009) reported in her article about Interactive learning and its use in the Asian Educational Institute. She found that, in Asian countries, the education system has in the past focused mainly on passive learning. Interactive learning techniques have vast

applicability. They can be used in learning different kinds of subjects such as mathematics, science, languages, music and so on.

These individualized instructions viz. CAI, PI, & II provide for learner decisions on what to learn, when, how, how much and also provide for a complete, enriched as well as retrievable and amenable setting and learning resource.

Researches on individualized instruction indicate that individualized instruction can make education more productive, more individualized and more powerful to achieve excellence in education. The investigator felt that two of the most difficult subjects to learn are mathematics and science. This is because there is considerable complexity in the concepts that have to be learned in these two subjects. Individualized Instruction enables them to overcome their shortcomings in such subjects and be on par with everyone else in them.

It is also felt by the investigator that no studies have been found in which the effectiveness of individualized instructions i.e. CAI, PI and II on students' performance has been tested. So, the investigator selected a topic to understand the effectiveness of Computer Assisted Instruction; Programmed Instruction; and Interactive Instruction on performance of students.

Objectives of the Study

1. To find out the difference in performance of students in chemistry when they are exposed by Interactive Instruction (II), Computer Assisted Instruction (CAI) and Programmed Instruction (PI).
2. To compare the effectiveness of instructions on the students' performance among the groups i.e. Interactive Instruction (II); Computer Assisted Instruction (CAI); and Programmed Instruction (PI).
3. To compare the effectiveness of instructions on students' performance between the groups i.e. Computer Assisted Instruction (CAI) & Interactive Instruction (II); Programmed Instruction (PI) & Interactive Instruction (II); and Programmed Instruction (PI) & Computer Assisted Instruction (CAI).
4. To study the impact of these instructions on students' performance when they are exposed to Computer Assisted Instruction CAI; Programmed Instruction (PI); and Interactive Instruction (II).

Hypotheses

In order to achieve the above objectives, the following null hypotheses were formulated:

Ho 1 There is no significant difference in effectiveness of instructions on the performance of students in chemistry when they are exposed to Interactive Instruction (PI); Computer Assisted Instruction (CAI); and Programmed Instruction (II).

Ho 2 There is no significant difference in effectiveness of instruction on students' performance among the groups i.e. Interactive Instruction (II), Computer Assisted Instruction (CAI) and Programmed Instruction (PI).

Ho 3 There is no significant difference in effectiveness of instructions on performance of students between the groups i.e. Computer Assisted Instruction (CAI) & Interactive Instruction (II); Programmed Instruction (PI) & Interactive Instruction (II); and Programmed Instruction (PI)& Computer Assisted Instruction (CAI).

Ho 4 There is no impact of instruction on the students' performance when they are exposed to Computer Assisted Instruction CAI; Programmed Instruction (PI); and Interactive Instruction (II).

Research Methodology

Research Design

The design employed for the experimental part is ***pre-test - post-test randomized group Design***. Following is the symbolic representation of design:

R	O_1	=	E_1	O_2	(Exposed by CAI)
R	O_3	=	E_2	O_4	(Exposed by PI)
R	O_5	=	E_3	O_6	(Exposed by II)
R	O_7	=	C	O_8	(Exposed by traditional method)

Where:

R	:	Randomly selected
E_1, E_2, E_3	:	Experimental treatment by CAI, PI and II i.e. independent variable.
C	:	Control group exposed by traditional method
O_1, O_3, O_5 & O_7	:	Observations or measurement obtained by pre – test.
O_2, O_4, and O6 & O_8	:	Observation or measurement obtained post – test.

Sample

The target population of this research was the 11th grade senior secondary students studying in chemistry in Nathdwara town of Rajasthan state. The nature of the study however required that the school was purposively selected. This is because research on CAI must necessarily be conducted in schools where computers are available for students' use and where the students are computer literate. This is why Shree Ji Public Senior Secondary School, Nathdwara were purposely selected for the study.

The sample for Experimental Groups I, II, III and Control Group were made of 40 (10 in each) students, selected randomly.

Research Instruments

The standardized instruments: the Socio-Economic Status Scale (SESS) developed by Meenakshi Sharma and the General Intelligence Test developed by Prof. S. M. Mohisen, were used. Some other instruments used for the study were: self-prepared Chemistry Achievement Test (CAT) and individualized instructions based on CAI, PI and II to conduct the experiment.

Procedure for Conducting the Experiment

This study being experimental, the experiment was conducted as follows:

- The experiment of the study took place during October month of academic year 2010-11; it lasted for three weeks.
- Academic contents in chemistry for study were identified. They were Organic Chemistry: some basic principles, chemical bonding & molecular structure and thermodynamics.
- In the first week of October, the General Intelligence Test (**GIT**) and Socio-economic Status Scale (**SESS**) were administrated to control extraneous variables.
- On the basis of GIT and SESS scores, forty students of average category and common between both groups were selected for treatment.
- These forty students were divided into four groups by random (Lottery) Method; (Ten students in each group). Out of them, one was the control group and other three were experimental groups.
- The pre–test **(CAT)** was administrated in all groups to assess the entering behaviour of students in second week before treatment.
- All four groups were assigned as group C, E_1, E_2 and E_3. The selected contents were taught in group C through conventional method whereas E_1, E_2 and E_3 were taught through computer assisted method, programmed instruction and interactive instruction respectively.
- It took 3 weeks to complete topics. After treatment on groups, post–test was administrated to all groups on same day to assess the performance of students.

Analysis and Interpretation

The analysis was done to verify the eight hypotheses stated for the study. The result of analysis and discussions are as stated below:

TABLE 1

Means Scores of Experimental Group (E_1), Experimental Group (E_2), Experimental Group (E_3) and Control Group

Name of Groups	Pre -test		Post -test		Difference of Mean	t-Value	Result	
	Mean	SD	Mean	SD			0.01	0.05
Control Group (C)	31.6	3.37	33.0	2.21	1.4	2.58	NS	*
Experimental Group (E_1)	30.9	3.03	34.8	2.62	3.9	5.79	*	*
Experimental Group (E_2)	31.0	2.05	33.8	1.48	2.8	8.57	*	*
Experimental Group (E_3)	27.9	3.73	33.4	2.46	5.5	8.41	*	*

* $t > 0.05\&0.01$ for df =9

The Table reveals that t value for control group was found 2.58, which is less than the Table value at level 0.01 but higher than the Table value at level 0.05. So, there is significant difference of teaching at level 0.05 (df = 9, t = 2.26) but insignificant at level 0.01 (df = 9, t = 3.25).

For Experimental group (E_1: CAI), the t value is 5.79 which is greater than 2.58 (at level 0.05) and 2.26 (at level 0.01). So it is found that there is significant difference at both levels.

For Experimental group (E_2: PI) t value is 8.57, which shows significant difference at both 0.05 and 0.01 levels.

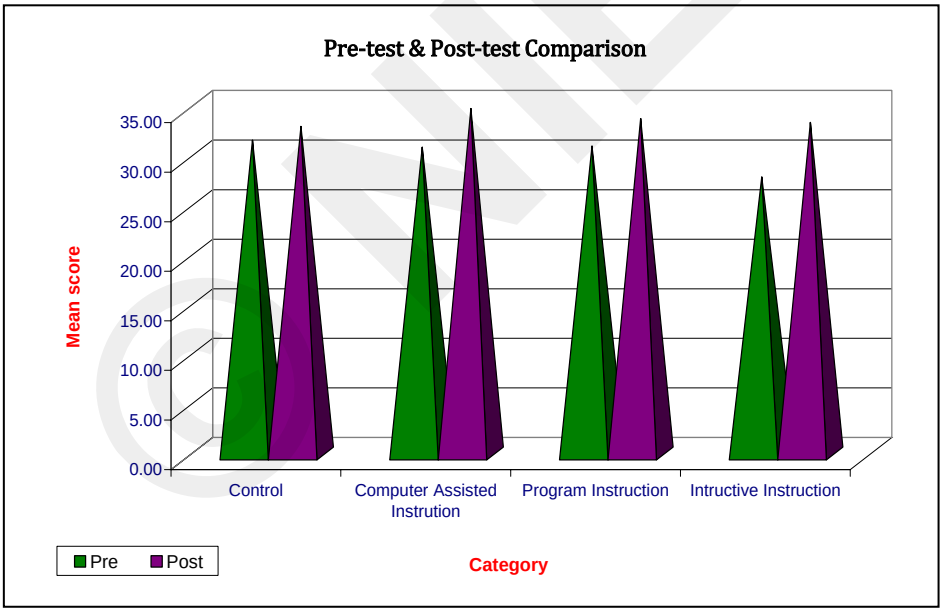
For Experimental group (E_3: II), the t value is 8.41 which shows that there is significant difference at 0.05 and 0.01 levels because this value is higher than the Table value at both levels.

Hypothesis-1 is rejected.

Graphical presentation (Figure 1) of significant difference in the mean pre–test and post–test scores of Experimental Group (E_1), Experimental Group (E_2), and Experimental Group (E_3) and Control group is as follows:

FIGURE 1

Graphical Representation of Scores



So, it can be concluded that there is significant difference on the performance of students when they are exposed to Interactive Instruction, Computer Assisted Instruction (CAI) and Programmed Instruction. Hence, hypothesis I is Rejected. It means that the impact of teaching or instruction is positive.

TABLE 2

Analysis of Variance for Post–test Scores of Students in Experimental Groups (E_1, E_2, and E_3) and Control Group

Post -test	Sum of Square	df	F	Mean of Sum of Square	Result	
Between Groups	17.9	3		5.97	0.05	0.01
Within Group	179.6	36	1.2	4.99	**	**
Total	197.5	39				

****** Insignificant

The value of F ratio is 1.2 which is found to be not significant at both levels 0.01 and 0.05. Since the Table value of F ratio for df = 3 between group and df = 36 within groups is 2.87 and 4.48 at level 0.05 and 0.01 respectively, this result indicates that there is no significant difference in effectiveness of instruction on students' performance among the groups, i.e., CAI, PI and II. Hence, the hypothesis 2 is accepted.

TABLE 3

The t-Scores of Experimental Groups E_1&E_3, E_2&E_3, E_3&E_1

Category1	Category2	Mean		SD		Difference of Mean	t-Value	Significance	
		M1	M2	SD1	SD2			0.05	0.01
CAI(E_1)	II(E_3)	34.8	33.4	2.62	2.46	1.4	1.233	**	**
PI(E_2)	II(E_3)	33.8	33.4	1.48	2.46	0.4	0.441	**	**
PI(E_2)	CAI(E_1)	33.8	34.8	1.48	2.62	1.00	1.053	**	**

****** Insignificant For df 18

The difference in mean post–test scores of E_1&E_2 is 1.40 and t value is 1.233. This t value is less than the Table value at both levels. It can be concluded that the effectiveness of instructions on students' performance in both groups is not significant.

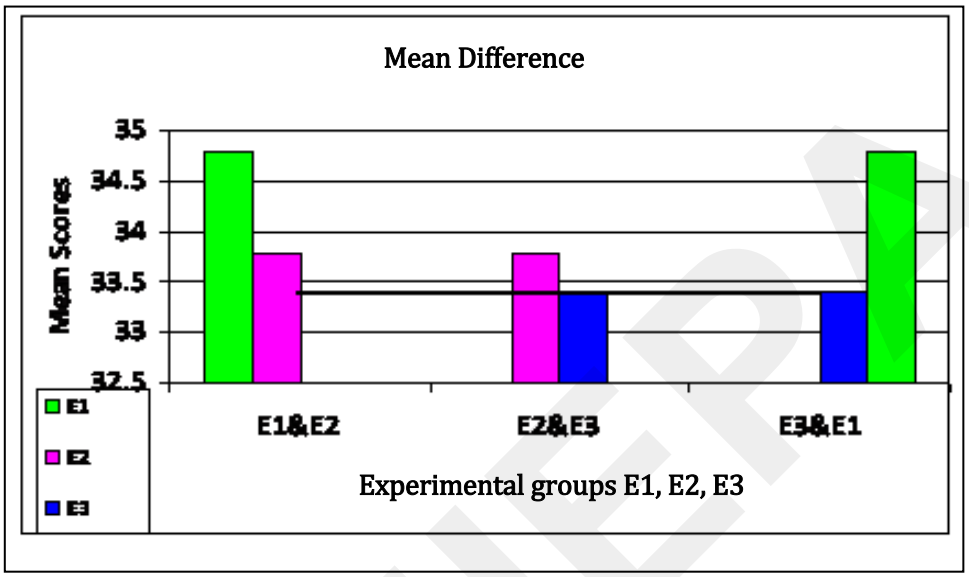
The table reveals that the t–value of E_2&E_3 is 0.441 which is less than 2.10 (at 0.05 levels) and 2.28 (at 0.01 levels). It can be concluded that the difference between effectiveness of instructions on students' performance is not significant when they are exposed to Programmed Instruction (PI) and Interactive Instruction (II).

The table shows that the t – value of E_3&E_1 is 1.053 which is less than the value at level 0.05 and 0.01. It can be concluded that there is no significant difference in the effectiveness of instructions on students' performance when they are exposed to Computer Assisted Instruction (CAI) and Programmed Instruction (PI). Hence, the *hypothesis 2 is accepted*.

The results of analysis of mean Difference of post–test scores of experimental Groups E1, E2 & E3 is also shown by graphical representation at Figure 2.

FIGURE 2

Graphical Representation of Mean Difference



It can be concluded that the mean differences between experimental groups i.e. CAI&II,PI&II,PI&CAI are found to be not significant. Hence, there is no difference between two groups of individualised instructions.

TABLE 4

Correlation between Pre–test and Post–test Scores of Experimental Groups E_1, E2 & E_3

Category	Correlation	Significance Level	
		0.05	0.01
Computer Assisted Instruction (CAI)	0.8344	*	*
Programmed Instruction (PI)	0.9316	*	*
Interactive Instruction (II)	0.8540	*	*

* Significant for df18

The above table represents that correlation value between the pre–test and post– test scores of Experimental Group (E_1) is 0.8344. This value is higher at both levels 0.01 and 0.05 for df 18 which indicates that it is significant at both levels. It shows high impact of CAI on students' performance because the investigator gets high positive correlation between pre-test and post-test scores.

The table also reveals that the correlation between pre–test and post–test scores of Experimental Group (E_2) is 0.9316. It is higher than the Table value 0.44 and 0.561 at both 0.05 and 0.01 levels respectively. This is very high positive correlation. Hence, it indicates a

significant impact of instruction on students' performance when they are exposed to Programmed Instruction.

The correlation between the pre–test and post–test scores for Experimental Group (E_3) is 0.8540, which is comparatively higher than value at both 0.05 and 0.01 levels. This result indicates that there is high positive correlation between them. Therefore, there is significant impact of instruction on students' performance when they are exposed to Interactive Instruction (II).

Hence, hypothesis 4 is rejected.

Discussion

The finding of first objective shows that the impact of teaching is positive after giving the treatment to experimental groups as well as control group. This indicates that the individualized instruction and learning strategies can make education more productive, more individualized and more powerful to achieve excellence in education.

The results of the evaluations also show that the Experimental group which is exposed to interactive instructions was found to be more successful at answering the questions of the chemistry achievement test (CAT) as compared to other experimental groups. The investigators felt that a learner can learn only if he actively responds in learning situations. In interactive instructions, after presenting learning materials, which he is ready to interact and required to respond to question based on that information. In this way, he is made to pay full attention to the learning materials.

In the same way, Computer Assisted Instructions also play a great role in enhancing the performance of students**.** The investigator observed that computer instructions showed greater increase in their achievement scores as compared to programmed instructions and control group. But the Programmed Instruction also has its own effectiveness of teaching on students' performance. When the students were taught by Programmed Instructions the investigator observed that the achievement scores increased as compared to control groups and of the same group before giving the treatment.

The investigator also found that the control group achieved well when the students' were taught by traditional method of the same group, but the effectiveness of teaching on students' performance was found to be less as compared to other three experimental groups (E_1: CAI, E_2:PI, E_3:II). So, it can be concluded that whenever students are exposed to any teaching methods, either conventional or individualized instruction, the performance of students always increased.

The objective 2 is to compare the effectiveness of instruction on students' performance among the groups viz. CAI, PI and II. The investigator found no significant difference of instruction on students' performance among experimental groups. This result reveals the following facts:

- All individualized instructions are forms of teaching in which instructions take place on an individual rather than group basis.
- Students' cognitive and psychomotor skills too vary, so, individualized instruction can be of great help to meet these needs of the students.
- In all individualized methods, students understand the concepts by learning the content in small steps or by active participation in learning.

The results of objective 3 show that on comparison of students' performance when they are exposed to CAI and II (E_1&E_3), the students of both groups performed approximately equally this is due to following facts:

- The students' reaction towards computer assisted instruction materials and interactive instructional materials was positive.
- The investigator found that the student were involved in learning with their active participation in both groups.
- It is also observed that both the methods increased the learning scope of the students and made them more confident in understanding of different content. The student got the opportunity to learn at his pace, his own rate and his own style.

In this reference, Brophy (1999), Tseng (1999), Chang (2000) and Stern and Repa (2000) studied that CAI was a successful way of teaching in behaviour modification.

The observation of E_2&E_3 emerged that the difference in effectiveness on students' performance is not significant because they performed equally when they were exposed to Interactive Instruction and Programmed Instruction. This can be explained by the following facts:

- In both the teaching methods, the learning materials formed to be a device for self-study.
- Learning by Programmed and Interactive materials was more effective, permanent and interesting which were found to be suitable for average intelligence group of students.
- Students gained significantly in the knowledge of subject by reading the text.
- In brief, it can be concluded that students gain knowledge by active participation in learning. In Programmed Instruction the content was presented in small chunks.
- There is active participation of learner because the learner responds to questions given in each frame.

Kulkarni and Dewan (1997), Colbum (2005), N. Izzet Kurbanozul et al. (2006) compared the success of Programmed Instruction with the conventional teaching approach. They found that programmed learning could be considered as a better alternative to conventional lecturing in teaching.

- The result of E3&E1 showed no significant difference between Computer Assisted Instructions and Interactive Instruction. The effectiveness of teaching on students' performance was equal. This result is supported by following facts:
  - In CAI the learners work with the materials individually at their own pace.
  - The students learn through a variety of carefully ordered sequence of the materials.
  - The learners are immediately informed at every step whether their response is right or wrong by putting questions in interactive session.

The above results are supported by Anurdha Sukla (2009). She reported about Interactive learning, that in Asian countries, the education system has in the past focused mainly on passive learning. Interactive learning techniques have vast applicability; that would useful in learning different kinds of subject.

The objective 4 is to find out the impact of CAI, PI and II on students' performance respectively. The result shows that Computer Assisted Instruction had a high positive impact on students' performance. Therefore, it can be concluded that CAI, as instructional tools, has been effective in raising the achievement.

The impact of Programmed Instruction is also found to be positive on students' performance. It is also indicated by previous researches that programmed learning is one of the better known methods of student-centered learning.

It can also be concluded that the individualized instructions help the student to learn at his own pace, his own rate and in his own style. It is also believed that the students' performance increases after treatment by individualized instructions because these instructions are based on some principles like active responding, positive conditions and consequences, Specification of objectives, Organization of material, Mastery before advancement, evaluation/objectives congruence, frequent Evaluation, Immediate feedback, Self-pacing, Personalization.

Conclusion

The main concern of chemistry teachers is search for efficient and enjoyable ways of communicating chemistry concepts to students. From the analysis it is observed that the performance of the students in achievement test regarding the use of individualized materials such as Computer Assisted Instruction, Programmed Instruction and Interactive Instruction are much better than the students who followed conventional method of teaching. The analysis also reveals that there is no significant difference in mean post–test scores among two Experimental Groups like CAI & II, CAI & PI and PI & II.

On comparing the effectiveness of instruction on students' performance among groups, it is found that there is no significant difference of instruction on the students performance.

It is also found that there is high positive correlation between pre–test and post–test scores of Experimental Groups E_1, E_2 and E_3 when they are exposed to CAI, PI and II respectively. These results indicate that there is positive impact of instructions on students' performance.

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Journal of Educational Planning and Administration
Volume XXVII, No. 2, April 2013, pp. 169-178

University Ranking and Tertiary Education System Benchmarking

—Divergent Methodologies, Convergent Results?*

Benoit Millot#

Abstract

University International Rankings (UIRs) have their fans (amongst which universities which make it amongst the best ranked) and their foes (other universities and scholars who point to the methodological shortcomings of the rankings and their perverse effects on politicians' and university leaders' choices).

Beyond the technical debate about the UIRs, there is also the idea that, instead of focusing on individual universities, it would be more useful to put the spotlight on the entire tertiary education sectors and to shift from ranking institutions to benchmarking countries' systems. It is argued that such a shift would help in the design of reforms which encompass all types of tertiary education institutions, rather than racing to create/maintain a few centres of excellence.

UIRs have been around for several years. Efforts to develop reliable International System Benchmarking (ISB) instruments are more recent, and the first comprehensive one has been released only this year.

The paper compares the results of the major UIRs with those of the first available ISB. The paper outlines the results of the mainstream UIRs; briefly summarizes ISB procedures; and compares the results of the two instruments.

Ironically, this paper concludes that university rankings, when analyzed at the country level, yield similar results as those obtained by the first system benchmarking. The two instruments converge to suggest that high-income countries have the ability to produce high quality universities, which, in turn, help them maintain a high performing system of tertiary education. Part of the explanation for these findings comes from the bias common to the two instruments, that is, an overemphasis on research and on well-resourced systems.

* This work has largely benefitted from lively discussions among the members of the World Bank Higher Education Group, from the support of the South Asia Human Development Unit at the Bank, and from Laura Gregory's relentless assistance. Indeed, the findings, interpretations and conclusions expressed in the paper are the author's sole responsibility.

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Introduction

University International Rankings (UIRs) have become a reality, and, despite their shortcomings and the rise of resistance against them, they are likely to stay around. Critics of UIRs target methodological weaknesses (for example, bias in favour of research, use of composite indicators, reliability of peers' subjective opinions, and so on). But they also point out the perverse effect of UIRs on the decisions of tertiary education institutions and of national authorities incharge of tertiary education—racing to develop world class universities at the expense of national tertiary education systems. In reaction to these caveats, analysts have convincingly argued that instead of focusing on individual universities, it would be more useful to put the spotlight on the entire tertiary education systems. Simultaneously, there should be a shift from ranking to benchmarking. This twofold shift would allow countries to assess the health of their higher education systems and to design reforms encompassing all types of tertiary education institutions rather than on a few excellence centres. Efforts are currently underway from various quarters to develop reliable International System Benchmarking (ISB) instruments, and the first comprehensive one of its kind has recently been released.

This note's limited objective is to compare the results of the main UIRs with those of the first available and reliable real ISB. It does not dwell on the methodologies of the UIRs and only marginally tackles that of the ISBs (which have not yet received as much attention as the UIRs). The first section of this note deals with the results of the mainstream UIRs; the next section briefly summarizes the ISB procedures; the third section compares the results of the UIRs with those obtained by the first ISB selected for this study; and the final section draws some conclusions from this exercise.

I. University International Rankings: Key Results from the Main Leagues

The two UIRs most widely referred to by the academic community, analysts and decision makers are arguably the Academic Ranking of World Universities (ARWU), launched by the Shanghai Jiao Tong University, and the one operated by Quacquarelli Symonds (QS) under the auspices of Times Higher Education (THE). The data examined pertain to 2010 and 2011.[1]

The 500 top universities for each ranking are concentrated in 50 countries in the QS league and in 39 countries in the more exclusive ARWU league. All but two countries hosting the top universities in the ARWU league are also present in the QS league, which is a first (and strong) hint that the two rankings yield close results. The subset of countries which appear in both leagues consists of 37 countries (Table 1).

[1] Since then, the THE ranking is operated by Thomson Reuters, and a new ARWU ranking has just been released for 2013. However, the rankings are stable enough for the main results based on data obtained from two and one year old rankings to remain valid. Indeed, the exercise needs to be updated with the most recent data.

TABLE 1

Countries with Top Universities Ranked by both QS and ARWU Leagues, 2010/11

1	Argentina	13	Germany	25	Norway
2	Australia	14	Greece	26	Poland
3	Austria	15	Hungary	27	Portugal
4	Belgium	16	India	28	Russia
5	Brazil	17	Ireland	29	Saudi Arabia
6	Canada	18	Israel	30	Singapore
7	Chile	19	Italy	31	South Africa
8	China	20	Japan	32	Spain
9	Czech Republic	21	Korea, South	33	Sweden
10	Denmark	22	Mexico	34	Switzerland
11	Finland	23	Netherlands	35	Turkey
12	France	24	New Zealand	36	United Kingdom
				37	United States

Source: ARWU and QS data sets.

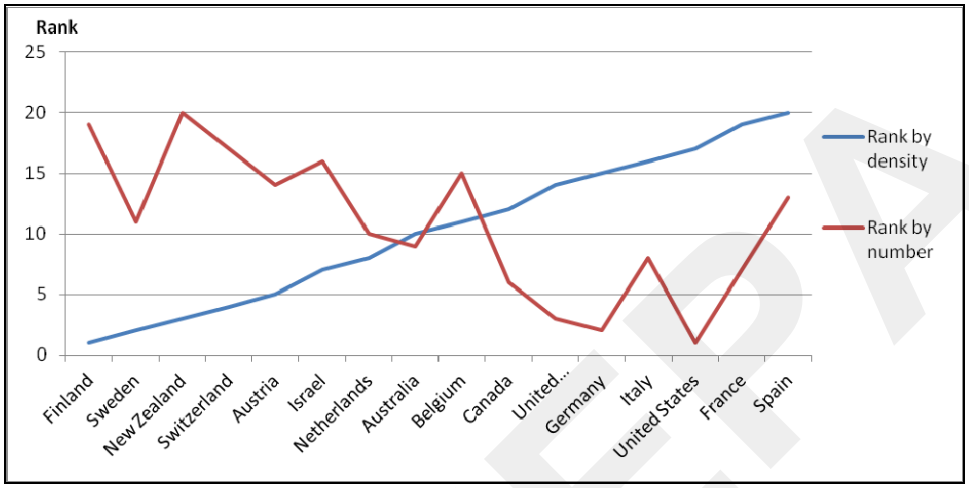
In order to make comparisons between countries, we cannot be satisfied with the sheer number of top universities—this number needs to be weighted in order to control for the size of the countries. One possibility would be to use each country's population, but this is not fully satisfactory because it ignores intergenerational differences. Instead, we use the number of persons of tertiary age as a weight. The ratio of the number of 500 top universities to the tertiary-age population gives us what could be labeled the "density of top universities." Density gives an idea of the supply of such universities for the potential clientele, i.e., the number of top universities available for one million persons of tertiary age. In fact, using the ARWU data for illustration purposes, it is clear that the number of top universities and their density follow almost opposite tracks (Figure 1).[2]

Turning from now on exclusively to the density of top universities, we firstly note that out of the 25 countries with the highest density of such universities, 23 are to be found in both QS and ARWU rankings—an observation which confirms the first hint mentioned above regarding the convergence of the two leagues.

Secondly, the rankings of countries by density of top universities are very closely correlated for QS and ARWU.[3] With the exception of Ireland, which is number one in the QS league and only number 13 in the ARWU league, most countries have a similar position in the two rankings, and the values of the density ratios in the two leagues are also very close for each individual country (Table 2). Hence, despite their different approaches, the two leagues yield highly comparable results.[4]

[2] The coefficient of correlation between the two series (R^2) is -0.69.
[3] $R^2 = 0.95$.
[4] The coefficient of correlation between the two rankings based on density (R^2) is 0.95.

FIGURE 1
Ranking of Countries by Number and by Density of Top Universities in ARWU League, 2010



A third set of observations is the opportunity to make an important aside. On the one hand, all the 37 countries but one (India), are either high-income or upper-middle income countries. This observation substantiates the assertion that UIRs' methodology is putting a premium on well resourced universities. On the other hand, even within the group of less than 40 countries which harbor the top world universities, there is a huge gap between those leading the flock and those at the lagging end: while in Finland, two world class universities serve 100,000 tertiary age persons, in India, two world class universities cater to 100 million potential clients. Indeed, there is a strong and positive correlation between the density of top universities and the GDP p.c.[5]

Despite significant differences in the way they are developed, QS and ARWU rankings do share some common points, in particular the size of the universe that they cover (focusing on the top 500 universities) and the reliance on a range of indicators encompassing several areas of academic life. This is not the case for a relatively newcomer to the field, the Webometrics ranking, which considers a universe of more than 12,000 institutions worldwide, and relies on several aspects of the visibility of institutions on the Internet.[6] Given such a disparity in the methodology, one would expect widely different results in the rankings. Surprisingly, the comparison made on the 500 top universities of the three leagues shows strikingly similar results, and the correlations between the three rankings are significant and positive.

5 $R^2 = 0.70$ with QS and 0.75 with ARWU.
6 Webometrics is developed by the Cybermetrics Lab, under the Spanish National Research Council.

TABLE 2

Density of Top Universities in QS and ARWU Leagues, 2010/11

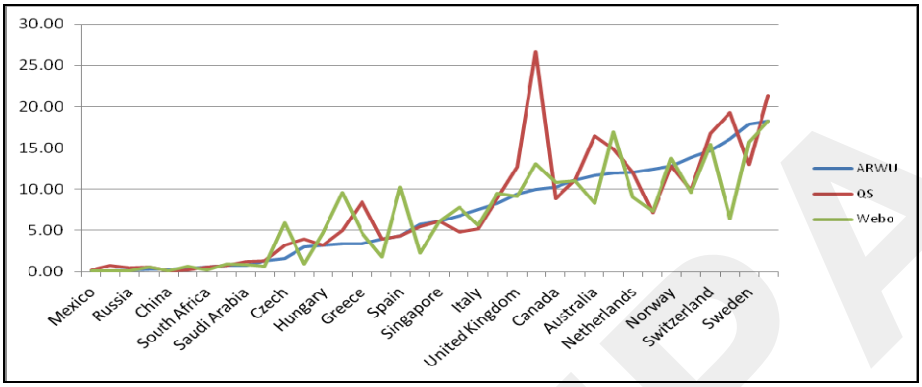
	QS		*ARWU*
Ireland	23.7	Finland	18.3
Finland	21.4	Sweden	17.9
New Zealand	19.2	New Zealand	16.0
Switzerland	16.7	Switzerland	14.6
Australia	16.4	Austria	13.9
Denmark	14.6	Norway	12.6
Sweden	13.1	Israel	12.3
Netherlands	13.0	Netherlands	12.0
United Kingdom	12.7	Denmark	11.7
Norway	12.6	Australia	11.6
Belgium	11.1	Belgium	11.1
Austria	10.0	Canada	10.2
Canada	9.3	Ireland	10.1
Germany	8.9	United Kingdom	9.5
Israel	7.0	Germany	8.4
Singapore	6.0	Italy	7.6
France	5.3	United States	6.8
Italy	5.2	Singapore	6.0
Greece	5.2	France	5.8
Portugal	5.1	Spain	4.4
Spain	4.9	Japan	4.0
United States	4.7	Greece	3.4
Japan	4.0	Portugal	3.4
Korea, South	3.6	Hungary	3.3
Czech Republic	3.3	Korea, South	3.0
Chile	2.0	Czech Republic	1.6
Hungary	1.6	Chile	1.4
Saudi Arabia	1.2	Saudi Arabia	0.8
Poland	0.8	Poland	0.8
Russia	0.6	South Africa	0.6
South Africa	0.6	Brazil	0.4
Argentina	0.6	China	0.3
Turkey	0.3	Argentina	0.3
Brazil	0.2	Russia	0.2
Mexico	0.2	Turkey	0.1
China	0.1	Mexico	0.1
India	0.1	India	0.02

Note: Density = Number of top 500 universities/1 million persons of tertiary education age.
Source: Author's calculations, based on ARWU and QS data.

In conclusion of this first section, there are strong indications that three of the major and most popular UIRs have converging results both in terms of the set of countries hosting "world class universities" and in terms of the rankings of countries within this set (Figure 2).

FIGURE 2

Density of Top Universities in ARWU, QS and Webometrics Leagues, 2010/11



Source: Author's calculations based on ARWU, QS and Webometrics data.

II. International System Benchmarking

The purpose and focus of ISB are quite distinct from the ones explicit in UIRs, as mentioned above. The former targets country systems and vow to assess their performance against set criteria while the latter focuses on individual institutions. Although the need for ISB instruments was identified long ago, few practical attempts have been made to implement them. Statistical challenges account for this situation. Following the policy brief prepared for the Lisbon Council covering 17 countries, the work undertaken by OECD, and the World Bank's benchmarking of universities in the Middle East and North Africa,[7] the first genuinely comprehensive ISB, namely the U21 Ranking of National Higher Education Systems (U21), was developed by the Melbourne Institute in 2012.[8]

U21 is based on four sets of indicators: Resources, Environment, Connectivity and Output. Five straightforward indicators, linked to the financial resources allocated to tertiary education, are used to assess the performance in the first area (Resources). The main novelty of the U21 lies in its use of indicators designed to characterize the Environment, particularly the subset of indicators related to the "qualitative measure of the policy and regulatory environment." These indicate a significant progress because they respond to the widespread view that governance issues are a main constraint to the development and improvement of tertiary education systems.[9] Connectivity, the third area considered by U21 is measured by two highly relevant indicators: (i) the proportion of international students in tertiary education; and (ii) the proportion of articles co-authored with international collaborators.[10] Output, the fourth area under U21, is measured by a basket of 9 indicators

7 OECD 2011, World Bank 2012.
8 Williams et al. 2012.
9 Fielden 2008.
10 "Connectivity" may be a misleading term since it may refer to Internet connectivity, as is the case with the Webometrics ranking. It may be more appropriate to label this area as "internationalization" in order to avoid any confusion.

spanning a whole range of criteria from research products to enrolment rates and graduate unemployment rates, the latter indicator being an answer to the growing concern regarding the employability of graduates produced by tertiary education systems.

Rankings are provided separately for each of the four areas mentioned above. Finally, an overall, composite indicator is constructed by combining the four sets of indicators.

III. Comparing UIR and ISB

Comparing the outcomes of the UIR and ISB instruments is made possible by the fact that we have translated the results of the university-based indicators of the UIRs in country-wide terms, making them analogous to the indicators of the ISB. The comparison is presented here in two steps: (i) how do the sets of countries compare—regardless of their individual rankings; and (ii) how do the rankings compare?

While the countries covered in the three versions of UIRs (QS, ARWU and Webometrics) are the *results* of university rankings, those considered by U21 are a deliberate *choice*, itself linked to a predetermined decision. U21 selected a set of 48 countries, using data from the National Science Foundation (NSF) ranking of research output.[11] It is, therefore, not a surprise to find a strong overlap between these 48 U21 countries and the 39 and 50 countries which host top universities according to ARWU and QS respectively, or indeed to the 37 countries to be found in both UIRs. The main differences between the group of UIR countries (and especially the more inclusive QS list) and that of the U21 are: (i) the lesser representation of developing countries in the U21 list;[12] and (ii) the stronger presence of Eastern Europe countries in the U21 list.[13] These differences aside, there is strong convergence between the UIRs and U21.

However, the decisive test is not the aggregate number of countries represented in both lists, but the rank of the countries. To test the degree of similarity in rankings, the correlations between the rankings based on QS, ARWU and U21 are calculated. The results are as follows:

THE and U21: $R^2 = 0.89$ ($p<0.01$)

ARWU and U21: $R^2 = 0.88$ ($p<0.01$).

These strongly positive and highly significant correlations show that the two instruments yield similar results. However, differences are also to be noted, especially in the dispersion of votes for the countries ranked first—while Finland is ranked in the top four in all three leagues, Ireland is ranked 1st in the QS but lags at the 13th and 16th ranks in the ARWU and U21 lists respectively. Even more striking, while USA leads the pack in the U21 list, it is relegated to ranks 17 and 22 in the ARWU and QS leagues respectively. Still, there is a lot of stability in the rankings for most other countries (Table 3), and the superposition of the three lists shows remarkable homogeneity (Figure 3).

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11 From the top 50 countries in the NSF database, U21 added Hong Kong and Indonesia, and dropped 5 countries because of data limitations.

12 Egypt, Pakistan, Philippines and Tunisia appear in the THE league, but are absent from the U21 list.

13 Bulgaria, Croatia, Romania and Slovakia are selected in the U21 list but are not represented in the QS league.

TABLE 3

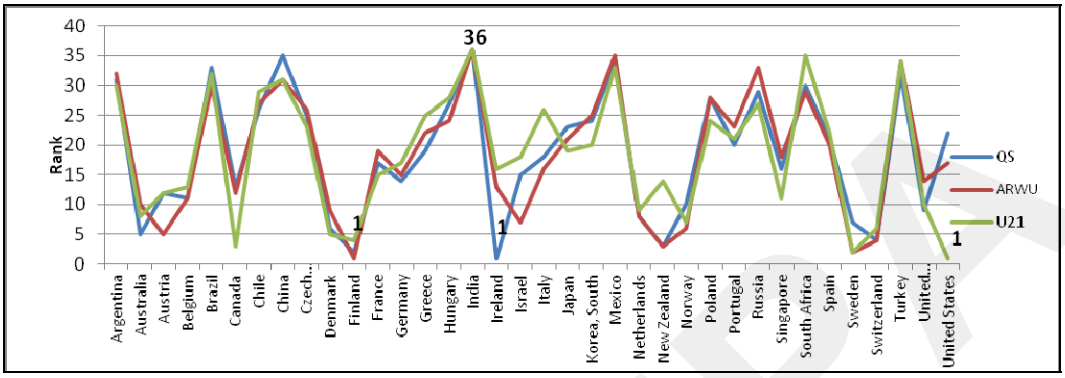
Country Rankings for QS, ARWU and U21

	QS	*ARWU*	*U21*
Argentina	31	32	30
Australia	5	10	8
Austria	12	5	12
Belgium	11	11	13
Brazil	33	30	32
Canada	13	12	3
Chile	26	27	29
China	35	31	31
Czech Republic	25	26	23
Denmark	6	9	5
Finland	**2**	**1**	**4**
France	17	19	15
Germany	14	15	17
Greece	19	22	25
Hungary	27	24	28
India	**36**	**36**	**36**
Ireland	**1**	**13**	**16**
Israel	15	7	18
Italy	18	16	26
Japan	23	21	19
Korea, South	24	25	20
Mexico	34	35	33
Netherlands	8	8	9
New Zealand	3	3	14
Norway	10	6	7
Poland	28	28	24
Portugal	20	23	21
Russia	29	33	27
Singapore	16	18	11
South Africa	30	29	35
Spain	21	20	22
Sweden	7	2	2
Switzerland	4	4	6
Turkey	32	34	34
United Kingdom	9	14	10
United States	**22**	**17**	**1**

Source: Author's calculations, based on QS, ARWU and U21 data.

FIGURE 3

Country Rankings for ARWU, QS and U21



Source: Author's calculations, based on QS, ARWU and U21 data.

IV. Conclusion

QS and ARWU produce very close results, which are also confirmed by the Webometrics league, despite the differences in methodology used by these three UIRs. In all three rankings, the density of top 500 universities (alias world class universities) is closely related to the wealth of the countries.

Comparing these results with those obtained by the U21 ranking—the first comprehensive International System Benchmarking—yields strikingly similar results, even though the focus and objectives of the ISB are clearly different from those of the UIRs. It appears that hosting world class universities is associated with the position held in system-wide rankings. Both kinds of instruments analyzed in this note suggest that being in a rich country helps both to boost the supply of high quality universities and to maintain a performing system of tertiary education. Part of the explanation for this finding comes from the bias common to the two instruments, i.e. an overemphasis on research and on well resourced systems. Despite this, it remains that these results reflect both the choices made by universities themselves and tertiary education decision makers at the national level, and the fact that money can buy quality. From a methodological point of view, it can be concluded that the empirical implementation of the concepts which radically differentiate the two instruments end up—so far—in very similar outcomes. Undoubtedly, as data availability increases, both rankings and benchmarking will improve, and their respective outcomes will become more and more complementary.

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Journal of Educational Planning and Administration
Volume XXVII, No. 2, April 2013, pp. 179-201

Conceptual Evolution of Adult Education in India and Correspondence with Global Trends

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Abstract

In most Third World countries like India where adult education witnessed an evolutionary process, there were generally two trends, viz., the centrality and continuity of certain core dimensions of knowledge, values and skills informing adult education, and the precedence in the focus of certain knowledge-values-skills blend during certain programme phases, as compared to others, depending on policy perceptions. This profile of adult education in India could also be seen as a window to the trends in the world at certain phases. Taking a leaf out of Paulo Freire's *Pedagogy of the Oppressed,* the article shows how India's policy premises as in NAEP (1978), its Review (1980), the NPE and its POA in 1986, as well as the Revised POA (1992) continued to serve as constant guideposts in designing the content and curriculum of adult education as an instrument of critical awareness about social deprivation and amelioration from it, as a window to the vision of new India.

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Grateful acknowledgements to the comments of anonymous refree and suggestions of friends, in particular, Dr. C.K. Mohan Rao, Dr. J.P. Dubey, R. Rajan, Dr. N.K. Srivastava and Zubair Quereshi.

Introduction

What we understand today about the scope of adult education and its curriculum and contents is a vastly changed and broadened vision and version as compared to the initial phase when attention was devoted to this engagement and programme. An entire evolutionary process resides in this journey and its understanding could yield a better appreciation. It could be interesting to notice how and why these incremental additions to the scope of adult education came on the national discourse which inevitably got reflected in the curriculum and content.

Two instances could serve as a snapshot, with regard to the focus of this paper, viz., to look back and appreciate the evolution and broadening of perception and vision of adult education with respect to its scope and contours. One, the view of Education Committee of the Central Advisory Board of Education (CABE) in 1939, the earliest official document on adult education, that "literacy is a movement of further education and must not be regarded as an end in itself." Referring to the Mass Literacy Campaigns and Programmes in many Provinces in 1938, the Committee said that "the primary aim of the campaign must not be merely to make adults literate, but to keep them literate. The instruction itself should be closely related to the adult learners' occupation, their personal interests and the social and economic condition under which they live" (cited in Singh, 1957: 57). The other, the view of the Education Commission (1964-66) that "Adult education is as wide as life".

With reference to the concept, vision, objectives and purpose of adult education and also the learning components envisaged and spelt out during different programme phases, as encapsulated in its curriculum and contents, there are two central points that this paper seeks to highlight, viz., (a) the centrality and continuity of certain basic life needs, as the core of adult education; and (b) the changing focuses, as sought to be given precedence, at certain programme phases, without necessarily negating the other important needs that adult education should address. These trends in the perceptions and visions of adult education are perused through programme phases like: (i) Literacy as social mobilization for the nationalist movement; (ii) Literacy for citizenship and democracy through Social Education in the fifties; (iii) the Gram Shikshan Mohim in Maharashtra; (iv) Functional Literacy phase of 60s; (v) Critical Pedagogy and Literacy as instrument for liberation phase of NAEP during the 70s; (vi) the retention of the critical pedagogy in diluted forms through the 1980s, with other larger social objectives as suggested by the Review Committee on NAEP in 1980 and as further reiterated by the National Policy on Education, 1986 and its Programme of Action; and (vii) the continuation of these objectives under NLM and through the 90s and beyond, till 2007, guiding the content and curriculum of the full-blown literacy movement covering basic literacy, post-literacy and continuing education programme. The approach during the 1980s, 90s and first decade of this century in India approximates to the global trend of Mass Literacy Campaign and the EFA Movement approaches. Thus, an attempt is also made to trace the coincidence of international trends corresponding to the Indian trend in adult education. A caveat would be in order: this paper is not a history of implementation of different adult education programmes and projects. It seeks to touch the vision and focus of adult education and its curriculum and content during the various programme phases.

Literacy as Social Mobilization for Participation in Nationalist Movement

With the advent of popular Ministries in the Provinces, adult education in the country received not only new life but new orientation. The new syllabus of adult education was not confined to pure literacy, but included, in theory at least, civic education of adults. The media of education were extended to include publications, posters, cinema shows, etc. The movement for adult literacy, for as yet it was not very much more than that, began in the Provinces, but the Central Advisory Board of Education (CABE) reflected accurately the interest and thought of the country on the subject. In its 4th meeting in December 1938, it appointed a Committee to consider the question of adult education. The highlights of the Report, as became evident in the 5th meeting of the Board in May 1940, contained many recommendations, as adduced above.

The Mass Literacy Campaign (MLC) in Bihar, as in all other Provinces, and Princely States had already started and were based on civic education, which was inspired by Gandhi's experiment in education. Gandhi's ideas about adult education were the major factor in influencing the concept, purpose and role of adult education during the nationalist movement. Gandhi's Basic Education (*Nai Taleem)* was based on work as pedagogy and basis for knowledge and learning; this was the same principle both for children as well as for adults. In the case of adults, activity-based learning had a larger vision viz., (i) relevant to life's immediate needs, as the universal truism for motivation and interest to learn by adult illiterate poor in rural areas; (ii) the spirit of co-operation which working together brings; and (iii) broadening the mental horizon of illiterates so that they participate intelligently in the freedom struggle (Nayar, 1980: 203). To Gandhi, adult education was clearly a political strategy for social mobilization of the rural people — illiterates and literates, to participate in the nationalist movement.

While Gandhi's Basic Education, widely emulated in different Provinces, was a constructive programme meant for strengthening of the democratic nation in the making, the Mass Literacy Campaign under the Congress Government in Bihar Province during 1938-39, was like "waging an unremitting war on poverty and ignorance" (cited in Shah, 1999). It is surprising to note that the perception of the nexus between poverty and illiteracy and the conviction for a war on both as an inter-connected strategy.

The curriculum and content contemplated and developed for Bihar MLC, as in other Provinces, were charts and primers — charts for imparting literacy, through alphabetical method, used in formal education system and using students and teachers. Primers may have contained awareness and knowledge inputs regarding illiteracy and ignorance, illiteracy and poverty, etc. (Singh, 1957). Besides, the meetings and rallies addressed by political leaders, the instructors who were High School and College students and teachers must have given supplementary information and motivation regarding participation in the freedom struggle.

The understanding about what to teach adults stemmed from ideas of the nation state, the role of adults as citizens and their participation in the development of the country, in the socio-economic, cultural and political development processes. The image of educated persons, as citizens, was the ideal for the adult education programme as well.

Literacy for Citizenship and Democracy: Social Education, 1950

For an understanding of the knowledge imparted through adult education, it is important to remember some basic facts. The social education programme initiated as adult education during the First Five Year Plan, and implemented by the States, continued in some States like Assam, Madhya Pradesh, Orissa, etc., well up to the time of NAEP in 1978. The only exception were two, namely, the Gram Shikshan Mohim in Maharashtra and the FFLP which was started in three districts of three states initially, like Punjab, Uttar Pradesh and Karnataka, in 1967, scaled up to 100 by 1973-74 and 144, covering many states by 1978 when the NAEP was introduced.

The objectives of Social Education were to: a) Instill consciousness of the rights and duties of citizenship and foster a spirit of service to the community; b) Develop love for democracy and impart an understanding of the way in which democracy functions; c) Knowledge of the outstanding problems and difficulties facing the country and the world; d) Develop love for the pride in our cultural heritage through the knowledge of our history, geography and culture; e) Teach the simple laws of personal and community health and develop habits of hygiene and cleanliness; f) Foster the growth of the co-operative spirit as a way of life; g) Provide training in crafts both as a hobby and as a means to economic betterment; h) Provide cultural and recreational facilities by way of folk dances, drama, music, poetry, recitation and other ways of spontaneous self-expression; i) Provide through these various activities as well as through reading and discussion groups, an understanding of the basic moral values; j) Give a reasonable mastery over the tools of learning—reading, writing, simple arithmetic and to create an interest in knowledge; and k) Provide facilities for continuation of education through libraries, discussion groups, clubs and People's Colleges (Shah, 2012).

The core curriculum suggested in the Social Education included: (1) Health and Hygiene (2) Family and Community living (3) Vocations (4) Literacy and Cultural activities and (5) Recreational activities. The Social Education was defined as a "course of study directed towards the production of consciousness of citizenship among the people and promotion of social solidarity among them". It had three main aspects: (i) The spread of literacy among grown-up illiterates; (ii) the production of an educated mind in the masses in the absence of literacy education; and (iii) the inculcation of lively sense of rights and duties of citizenship — both as individuals and members of a powerful nation (cited in Shah, 1999).

Maulana Abul Kalam Azad, the first Education Minister and who was devoted to, and who took personal interest in adult education, emphasized that attention must be paid to education in citizenship, to personal and public health, to the provision of information which would allow people to effect some improvement in their economic condition, to the encouragement of art and literature, including creative activities and to the development of universal ethic of tolerance, mutual appreciation and universal principles of right conduct (Bordia, 1981: 59).

Gram Shikshan Mohim (Village Literacy Movement), 1959-1963

The Gram Shikshan Mohim, 1959-1963 was the first genuine MLC initiated after Independence albeit in one district, viz., Satara in 1959 and up-scaled later to the whole of

Maharashtra. As part of the curriculum and as topics in the syllabus, information was given regarding:

(i) Sanitation, farming, administration of the village, child development;
(ii) Importance of cleanliness, instructions regarding use of bathrooms, latrines, urinals, etc;
(iii) Inculcation of healthy habits among villagers; and
(iv) Information regarding farming methods of sowing, various types of manures, preventive measures for crop damage by diseases in view of the centrality of agriculture to the life in the village.

For the initial campaign, the literature used consisted mainly of charts, strips and booklets, covering the topics, as above, and also relating to common themes of economic, social and religious nature, relevant to villagers (Saraf, 1982).

After the initial four months' campaign was over, the programme of re-training in literacy and enriching the knowledge of neo-literates was taken up. This follow-up work was done through the circulating library scheme and social education centres. Four sets of booklets, each set containing 10 booklets, were circulated among the neo-literates by the teachers of primary schools through the children enrolled in schools. The theme of the materials was of direct relevance to the neo-literates and catered to their social, religious, cultural and economic felt needs. The titles of these forty booklets were:

First set: *Our neighbour, our animals, our crops, kitchen gardening, our treasurers, Goddess Amba of Kolhapur, Ramayana Balkanda, Coastal part, Man's wonderful study, Gandhi Baba.*

Second set: *Village family, Jewel-like Jawar, Paddy (Japanese Method), Rama Sita, Shivaji, Jeeja Bai, Sant Tuka Ram, Sant Ek Nath, Jyotiba Phule, Dr. Ambedkar.*

Third set: *Gandhiji's village, groundnuts, new way, Ashoka, Eyes were opened, Agarkar, I shall be a farmer, Courts of law, Saint Gadgebaba, Bajra.*

Fourth set*: Sugarcane, night soil pits, Youth clubs, the farm shows the work, Sweet little home, mahila mandals (women's clubs), wheat, better nutrition within one's means, sweet grapes, animal diseases.*

These were materials about national leaders, historical personalities, major agricultural crops, civic and social matters, religious deities, etc.

It is revealing and sobering to note that these aspects of learning as part of adult education were internalized as critical and followed at least 6-7 years ahead of the global trend as evident in (EWLP) and in (FFLP), a few years thereafter.

Functional Literacy: Shift from Citizenship Pre-occupation

Improving the efficiency of the farmers for increasing agricultural production in the districts covered under HYVP was the objective of this programme of Farmers' Training and Functional Literacy Programme started in 1967-68 in three districts as a pilot project. As the operations involved adoption of improved and scientific practices, the farmers' training programme provided the essential inputs. Since illiteracy constituted a serious obstacle to increased production, the functional literacy programme of the Ministry of Education (MOE) helped illiterate farmers not only to acquire literacy in reading and writing skills, but also

the agricultural knowledge of immediate use to them in their day-to-day work. Much like the programmes in Algeria, Ecuador, Guinea, India, Iran, Madagascar, Mali, Tanzania, Zambia, etc., as part of the UN Agencies-sponsored EWLP, the functional literacy was envisaged (Dutta, 1986: 93-94) to help farmers to:

- Complete simple application forms for loans;
- Read and prepare their own Input Cards;
- Write simple letters;
- Keep simple account of the operations;
- Read and understand labels on fertilizer bags and pesticide packages; and
- Read and make use of simple extension bulletins, rural newspapers, etc.

Learning Materials: The concrete contents — subjects or themes — were identified by undertaking a quick survey in a few sample areas in selected districts. The survey sought to find out the needs and requirements of farmers cultivating the HYV of crops and applying modern methods and practices with regard to those crops. It was on the basis of the survey and discussions with the technical, professional and knowledgeable personnel in the field that the agricultural practices were identified and included in the curriculum and in the teaching and learning material.

The Directorate of Adult Education of the Ministry of Education under the Union Government, New Delhi, prepared the first book in Hindi, *Kisan Saksharata Pehali Pustak*, using the analytic-synthetic method containing 18 lessons to be covered in a period of six months. The first book was based on the findings of the survey conducted in the Lucknow district in millet (jowar) growing area, mainly with small farmers.

This was followed by a set of five supplementary readers based on different HYV crops. The first book was accompanied by a teacher's guide, designed to help teachers in the methodology of using the book, and co-relating agricultural practices with literacy skills. This was a prototype to be adapted to conditions in various districts, which varied from the social, agricultural, linguistic and cultural points of view. More than 70 teaching and reading materials in various Indian languages were produced (Dutta, 1986: 95; Mathur, 1972: 51).

The *Teaching and Learning (T-L) methods promoted and experimented within the FFLP were based on a combination of oral instruction, audio-visual communication, dialogues and discussions, demonstration and practical work.* These increased learners' participation and active involvement in searching solutions for the problems faced in daily life. In respect of the focus and objectives, and correspondingly in the curriculum and content of learning, in FFLP, there was a marked shift in emphasis from the traditional 3 R's to the 3 F's – functional literacy, food production and family welfare (Dutta, 1986: 99).

This programme required a new type of problem-based curriculum and integrated instructional material, for educating and informing illiterate farmers about high yielding varieties of seeds and package of improved agriculture. The *curriculum and content in adult education was designed as production-cum-learning-cum-discussion groups.* The pedagogy for adults hinged on demonstration, hands-on discussions, shared learning; seeing and experiencing being more effective and spontaneous learning process for adults.

The FFLP was the first programme funded by the Government of India with the collaboration of many UN Agencies like UNESCO, UNDP, FAO and in its 10 year existence was subjected to at least 10 evaluations on different aspects, separately and together, by so many different agencies. This was also the first inter-ministerial and inter-departmental

programme involving the Ministry/Department of Agriculture, Information Broadcasting and Education, from national, state, district, block and village levels. The critical nature of inter-departmental coordination, so essential for the success of a cross-cutting programme like adult education, with implications for the learning inputs from so many different departmental agencies, was highlighted as follows:

Adult education and adult literacy is a total programme. It cannot be run in isolation and that too by one department and within that department by one officer who is over-burdened with many jobs. We have to *pool the resources* — men, money and materials of all governmental departments dealing directly or indirectly with various programmes of adult education. It is high time that we free ourselves from problems of departmental jurisdiction and forge a united front to tackle this national problem. This type of close collaboration is not only essential at the national and state levels but it is even more important at the district, taluk and village levels. In this enterprise, I am sure that the Departments of Agriculture and the All India Radio will extend their full cooperation, and treat it not as a fringe activity but the hard core of the programme. Functional literacy is to be treated as equal among partners and not the last …. (cited in Saraf, 1982: 68, emphasis added).

Non-Formal Education

Introduced since 1975-76, NFE especially the functional literacy programme for the 15-25 age group youth and also up to 35 age group was to provide meaningful education to especially the weaker sections of society who were denied the benefits of formal education. The programmes were to be related to the needs and aspirations of the learners. Conceptually incorporating latest thinking in the field of adult education, NFE was seen in need to form an indispensable link between life, work and learning. Since the learners were already participants in several community work and civic activities, shoulder family responsibilities and have reached certain level of experience and maturity, the content of the programme was emphasized to be appropriately designed to strengthen what they possess and provide what they do not. The significant aspect of NFE was its emphasis on locally relevant and diversified content, including science (Mathew, 1990).

Non-Formal Education for Women: In the states not covered under the FFLP, the earlier programmes implemented by the States continued. These included the programmes of Adult Education and Extension by University Departments of Adult Education, Non-Formal Education for 15-35 age group, as part of the larger NFE programmes, NFE for Women, Condensed courses for Women organized by Central Social Welfare Board as well as the All India Radio programmes for women and organizations of Mahila Mandal in rural areas, the Functional Literacy for Adult Women (FLAW). In FLAW, contents included: altitudinal changes to play the role as citizens, elements of health and hygiene, food and nutrition, home management and child care, civic and vocational education (Shah, 1999; Dutta, 1986; Bordia, 1982: 13).

NAEP: Policy Perspective on Curriculum and Contents

The National Adult Education Programme (NAEP) was the first programme in adult education undertaken by the Central Government in 1978 on a national scale. The

conceptual framework of NAEP was concretized by emphasizing three aspects of the content:

(a) Literacy and numeracy, of a sufficient level, to enable the learners to continue learning further in a self-reliant manner;
(b) Functional development wherein functionality is viewed as the role of an individual as a producer and worker, as a member of the family and as a citizen in a civic and political system; and
(c) Social awareness, including an awareness about the impediments to development, about laws and government policies, and the need for the poor and illiterate to organize themselves for pursuit of their legitimate interests and for group action (Bordia, 1982: 26).

In respect of instructional agency in NAEP, it was presumed that school teachers would mainly shoulder the responsibility of being instructors. After national level consultations, it was decided they should be not be excluded from it, but should be fully involved as instructors, as incorporated in the policy document—*Outline of National Adult Education Programme*. But distinct preference for utilization of young people as instructional workers was decided as a policy. Prior to NAEP, designated and specific workers manned the teaching-learning task in the adult education programmes, such as Social Education Organiser in Social Education, and teachers and other such functionaries in other forms of adult education programmes. In NAEP, students as well as non-student youth were preferred as Instructors, in view of their idealism and dynamic vitality in organizing development-oriented various NFE programmes.

The implementing agency in NAEP was mainly the voluntary agencies. State governments were to step in only where none of the agencies like universities and colleges, anganwaris of ICDS programme, NYKs, employers, PRIs were available. The implementation agencies, with government sanction, could take up any one or more of the following programmes:

(a) Literacy with assured follow-up;
(b) Conventional functional literacy;
(c) Functional literacy supportive of a dominant development programme;
(d) Literacy with learning-cum-action groups;
(e) Literacy for conscientization and formation of organizations of the poor, as spelt out in the Outline of NAEP document, and strictly in keeping with the spirit as in the Programme Outline (Bordia, 1982: 18).

It was held as inconceivable that there could be a uniform programme in respect of adult education throughout the country. Therefore, *in design, NAEP was to seek to combine the learning components in the various adult education programmes, including agriculture, health and hygiene and family planning*, cooperatives and credit, etc., by harnessing the cooperation of the extension functionaries of those departments (Bordia, 1982: 27). *This was also true in respect of pedagogy*.

A *Catalogue of Literacy and Post-Literacy Materials* was brought out by the Directorate of Adult Education, New Delhi, in 1978. The Catalogue and the actual materials as well as the new materials developed by the State Resource Centres (SRC), specially created for this programme, were put on an exhibition, exclusively organized for this purpose, in the launching ceremony of NAEP on October 2, 1978. *The idea was that, based on the guidelines*

of Central and State Government, SRCs and DAE, the implementing agencies could adopt or adap them, or prepare new materials based on those already available (Bordia, 1982: 27, 32).

From the point of view of curriculum and content as well as in terms of the society that NAEP wanted to fashion, it may be seen as a weak case, of using the content and curriculum envisioned for the conventional adult education programme, to create a society without exploitation, of equality, of empowerment to fight for their rights by the exploited poor illiterates. The most critical break with the past for such curriculum and content perspectives, conscientisation of those engaged in design and development of the content and curriculum, should at least have been made a pre-condition.

With respect to the implementation of NAEP, there is a basic dearth of literature about the curriculum and contents transacted in the adult education centres. At any rate, this promising programme had to endure an unfortunate premature end within 2 years of its commencement. The understanding and perceptions of the Review Committee on NAEP in 1980 is positioned here as, perhaps, the most momentous, in respect of curriculum and content and also in respect of the vision of the resultant society, which the NAEP envisioned.

The Review of NAEP, headed by D.S. Kothari of the Education Commission fame, premised that national development comprises economic, social, political and cultural development. Over-emphasis on one facet of development leads to imbalances and aberrations. This implies that a *national plan of development should include fuller employment and higher productivity, reduction of economic and social inequalities, a concerted attempt at family planning and welfare, and revitalization of our rich cultural heritage*. Like Preambles in the Constitution, these critical aspects of national development are identified and underscored so that these become the preambles for curriculum and content for the primers.

A few aspects dwelt by the Review Committee are discussed and its curriculum and content implications premised as implicit are seen here, *with the premise that these continued to serve, for nearly 3 decades thereafter,* at best in theory, *as milestones and benchmarks for curriculum design in respect of the development perspective and the society envisioned.*

Employment and Productivity: Programmes of fuller employment and higher productivity in the economy involve intensification and modernization of agriculture and allied activities and rapid industrialization. Improved productivity in agriculture and industry depends essentially on a literate and trained work-force, besides learning of new skills and upgrading of traditional ones.

Social Justice: Proper distribution of benefits of development to reduce social inequalities and to raise the standards of living of the common people. The legal, administrative and economic measures intended to secure social justice should be strengthened by extending meaningful education to the illiterate and the neglected so that they may responsibly organize themselves in their struggle against gross social inequalities and injustices.

Family Planning: Perhaps no problem is more urgent than the containment of the population growth. The rate of the country's development gets partially neutralized by increase in population (This was the perception in those days). The size of the family also has a bearing on the status of women and the family's economic condition. Inclusion of

population education in adult education programme would help observance of the small family norm which helps the family, and also is in the interest of the community.

Health-care: Primary health-care for all is the foundation for an adequate national health service. This would need education in nutrition, sanitation, better awareness of use of indigenous remedies for common ailments and physical exercise, including yoga for physical and mental health. Health-care is an important aspect of people's education.

Revitalisation of Cultural Creativity: Development must aim at meaningful and effective tapping of the massive unutilized reservoir of skills and creative social and cultural energy of the poor and socially neglected majority of our people. Nurturing of the folklore and cultural expressions of the urban and rural poor, the tribals and other peasants is an investment in social capital and also a motivation for participation in adult education (MHRD, 1980: 7).

Following are some of the reference points in designing content and curriculum and the T-L processes that include awareness-oriented interactions, lectures and demonstration. The purpose behind benchmarking these reference points is to treat them for a reality check of their reflection in the literacy movement during the 90s and thereafter in programme design as well as in pedagogy.

The perspective towards national development, the society envisioned and the requisite elements of adult education were viewed as a basic human need and also a part of the right to education. It is a necessary basis for the nation's striving for democracy and development, and a necessary part of any Basic Minimum Needs of the nation-wide programme. This entailed a number of implications for curriculum design and pedagogy in the wider sense.

Presaging NPE, 1986 and POA — An Adult Education Movement: The Review Report recommended that the programme of mass adult education has to be a national movement, in which all official, non-official, educational and development agencies are closely involved. It should receive full support of the Government — at the Centre, State and local levels. It should enjoy the goodwill and support of all political parties and the various mass organizations of workers, peasants, women, youth, etc. The educational institutions, the teaching community and students have a special responsibility towards the programme. A large section of the potential learners are workers in industry, mines, plantations, etc. It would, therefore, be essential for employers to make their employees and their families literate and to provide appropriate incentive to them. The media, both traditional and modern, will have to play a far bigger role than at present. There are in the country voluntary organizations devoted to social uplift, established under the inspiration of our great leaders. They have a very significant role to play, in promoting innovation and in reaching areas and sections of the population which generally tend to be neglected (MHRD, 1980: 15).

As would be evident later, the points were repeated in NPE, 1986 and its POA. Taking note of the successes scored and weaknesses remained in NAEP, the views of the Committee about the future of the programme in scope and organization served to inspire and guide the vision of adult education along the same lines, as borne out, firstly, from the perspective of NPE, 1986 and POA and NLM and the literacy movement through the 1990s and beyond. In respect of *widening and deepening of the content*, the Committee urged that a programme of adult education should include, besides higher level of literacy to guard against relapse, integration with formal education and to include knowledge of the basic principles of the Constitution, promotion of national integration, and a deepening of the cultural background and awareness about health and family planning, the importance of conservation of

environment, the relevance of science and scientific temper for shaping the future. These, as can be seen below, constituted the fourth objective of the NLM.

Functionality: The aim of functionality is improvement of vocational skills and for more productive use of time. Functionality should also include acquisition of skills to supplement one's income through village industries and activities such as poultry farming and dairying (MHRD, 1980). In the immediate future, these objectives served as guides for curriculum and content to the MPFL as well as other ongoing programmes of adult education (Rajan, 2003: 83).

Awareness: Not easy to define, its scope was seen to depend much on the perception, competency and commitment of instructors and supervisors. Awareness means that the poor should become conscious that, to a great degree, they can shape their own future through the interlinking of learning, reflection and concrete action; understand the reasons for their deprivation as embedded in the unequal socio-economic order, and laws and policies for protecting them against such deprivations, and organized action to secure the benefits of such laws (MHRD, 1980).

The assertion in the policy statement that (i) the illiterates and the poor can rise to their own liberation through literacy, dialogue and action; (ii) adult education should emphasize the imparting of literacy skills to persons belonging to the economically and socially deprived sections of the society; and (iii) motivation also depends on awareness among the participants that adult education programme will lead to the advancement of their functional capability for the realization of liberation. These assertions, policy premises and assumptions, first of all, neither did get converted into such liberation—igniting curriculum and content, nor it actually led or was even capable of leading to liberation from socio-economic oppression. Literacy is too feeble an instrument, bereft of other socio-economic transformational changes, to lead to liberation.

During the early 80s, there were a number of programmes in operation under different agencies — such as: (i) Rural Functional Literacy Projects (RFLP); (ii) State Adult Education Preogramme (SAEP); (iii) Adult Education Through Students and Youth (under UGC); (iv) Nehru Yuvak Kendras; (v) Non-formal Education for Women and Girls; (vi) Shramik Vidyapeeths; (vii) Central Board of Workers' Education; (viii) Functional Literacy for Adult Women (FLAW); (ix) Post-Literacy and Follow-up Programme; (x) Adult Education through Voluntary Agencies, (xi) Mass Programme of Functional Literacy (MPFL), etc. Doubtless, everyone of these programmes must have had its own primers, specifically aligned to the needs of its learners.

Curriculum Implications of Policy Postulates and Strategies: NPE, 1986 and POA Bear-out Perspectives Envisioned in 1980s

The *National Policy on Education* (NPE) 1986 and its *Programme of Action* (POA), 1986, made clear that "all existing Adult Education Projects would be reviewed and re-organised", as presaged in 1980. In the context of the strategy for re-organisation and making the existing programmes more effective, the NPE and its POA felt that in respect of certain specific group of beneficiaries, as covered in IRDP, NREP programmes, specific learning inputs would be needed. But, in respect of all other beneficiaries, there would be no change in the curriculum and content (GOI, 1986: 131-32).

However, it needs to be noted that some strategies declared also had the scope and possibility of being reflected as learning and awareness inputs and potential: (i) "active cooperation will be sought from political parties and the mass organizations of workers, peasants, women, youth and students", and "the district, tehsil and thana level administrative machinery will be involved in National Programme of Adult Education (NPAE) to ensure the support for awareness-oriented adult education programmes — these are examples of such "strategies", advocated in NPE, 1986 and its POA(GOI, 1986: 131-32). The POA was convinced that adult education is both a process through which effective delivery mechanisms are created for the deprived sections of society, and a forum through which such sections secure information and understanding regarding the processes of development. Hence, it delineated the ways to establish effective linkage between adult education and the various development programmes like IRDP, NREP, ICDS, FLAW, NYKS, etc. (GOI, 1986: 128-29).

NPE 1992 Acknowledged National Involvement in Literacy Movement: Six years after its initial formulation, at time of its revision in 1992, the NPE and its POA acknowledged how the whole nation, as well as its different agencies within and outside the government, as pledged by NPE, 1986, indeed got mobilized and involved itself in the Total Literacy Campaigns of NLM. The NPE came up for revision in the wake of the post-Mandal and Babri Masjid agitation. It was concerned about the erosion of essential values and an increasing cynicism in society, which "brought to focus the need for readjustments in the curriculum in order to make education a forceful tool for the cultivation of social and moral values". Vividly reminiscent of the 1980 Review Committee's recommendations about the future of adult education, the NPE argued that in "our culturally plural society, education should foster universal and eternal values, oriented towards the unity and integration of our people", so as to "eliminate obscurantism, religious fanaticism, violence, superstition and fatalism" (MHRD, 1992: 36). In the same vein, it went on to assure that NLM will be geared to mount the TLCs to the achievement of national goals such as alleviation of poverty, national integration, environmental conservation, observance of small family norms, promotion of women's equality, universalisation of primary education, basic health care, energisation of cultural creativity of the people and their active participation in the development process (MHRD, 1992: 15).

The POA (1992) reiterated the NPE's conviction to forge adult education as a means for reducing economic, social and gender disparities. But, it reminds that previous experience has brought out the fact that programmes of literacy can become meaningful only when they come along with package comprising practical information and skills relevant to day-to-day needs of learners. Therefore, the POA articulated the main features of the implementation strategy to include, among others:

- Application of science & technology, and pedagogical research for improving the pace and environment of learning;
- Establishing linkage between adult education and the developmental programmes; and
- A distinct slant in favour of women's equality and taking of all measures in pursuance of this resolve.

These are strong opinions and policy statements that used to get reflected in the curriculum of adult education programmes, as before.

The promotion of literacy became an important "national mission", as postulated and declared by the NPE, 1986 and its POA. It is important to remember that the "functional literacy" articulated in the NLM was what was conceptualized in NAEP and further endorsed in the NAEP's Review in 1980. The functional literacy implied: (i) achieving self-reliance in basic literacy and numeracy; (ii) becoming aware of the causes of one's deprivation and moving towards amelioration of conditions through organization and participation in the process of development; (iii) acquiring skills to improve the economic status and general well-being; and (iv) imbibing the values of national integration, conservation of the environment, women's equality, observance of small family norms, etc. These were again reiterated in the revised NPE, 1992 and its POA (MHRD, 1988; MHRD, 1992). This expanded concept of functional literacy can be viewed as literacy in rights, empowerment, development and improvement, requisites for the all-round development of individuals and the country as a whole, in the same way as the NAEP's Review envisaged and recommended, and as formed the staple of literacy primers in TLCs and other learning materials developed for PLP and CE programmes all over India during the 1990s and until 2007 when the NLM lasted. Brevity considerations preclude details of their curriculum and contents.

National Curriculum Framework for Adult Education, 2011: A recent example of the assertive demand about the desired vision for adult education and its curriculum and contents as put forth by the Expert Group on National Curriculum Framework for Adult Education (NCFAE) is worth recounting.

A nation that is literate is one where its citizens are empowered to ask questions, seek information, take decisions, have equal access to education, health, livelihood, and all public institutions, participate in shaping one's realities, create knowledge, participate in the labour force with improved skills, exercise agency fearlessly and as a consequence, deepen democracy. Systems are to be in place to build a nation that builds citizenship which is truly informed and literate … It is only when there is a credible, and institutionalized effort on a long term basis that the learner would take the programme of adult education seriously. The first step, therefore, is to understand adult education programme as a continuous and lifelong education programme, with all structures and institutions from national to habitation levels, on a permanent basis, as part of the education department. The principles of curriculum framework for adult education would need to be much more than literacy and post-literacy; it is the convergence of education, democracy, cultural practices, developmental practices, gender empowerment and much more (www.jkeducation.gov.in).

Evolution of Global Trends in Adult Education

"Fundamental Education", 1945-1964: Literacy as a fundamental human right is one of the central tents of the covenants of Unesco in its formation. But Unesco quickly abandoned the traditional concept of literacy, referring simply to reading and writing skills as an end in itself and the term *fundamental education* was adopted as it served as the starting point to promote personal development and community progress. Fundamental education was eventually merged with the perspective of "community development", imparting community development messages to adults (Lind and Johnston, 1990: 31-32). At the international level, with Unesco as the ideational spearhead, the values behind fundamental education as was seen to be co-terminus with community development ideals and this to be imparted through

the vernaculars. Use of vernacular languages was perceived to be a more effective method of imparting values of community education.

A series of studies about the effectiveness of the use of vernacular language as medium and more effective method, sponsored by the Unesco gave rise to the realization of the need to leave it to local contexts, with respect to the language and method. Fundamental education approach was found to be a weak strategy in eradication of illiteracy or even as the vehicle of community development values and ideals (Lind and Johnston, 1990: 70-71).

Functional Literacy, 1965-1974: The World Conference of Education Ministers on the Eradication of Illiteracy organized by Unesco at Teheran in 1965 declared that rather than an end in itself, literacy should be regarded as a way of preparing man for a social, civic and economic role that goes for beyond the limits of rudimentary literacy training, consisting merely in the teaching of reading and writing. It said that the process of learning to read and write should be made an opportunity for acquiring information that can immediately be used to improve living standards; reading and writing should lead not only to elementary general knowledge but to training for work, increased productivity, a greater participation in civil life, a better understanding of the surrounding world and should, ultimately, open the way to basic human culture (cited in NCERT, 1971: 782).

In pursuance of this, especially in developing countries, national development was viewed as more economic than social. Relieving shortages of domestic skilled manpower and equalizing economic opportunities for all citizens; training adult population to become more productive in economic development — such were the purposes of adult education. Producing skilled manpower in adequate number for various schemes of economic development, such as dams and factories — this was the purpose of adult education. It also became evident that the purpose of adult education depended on the level and type of economic development of the country — industry in the case of Western countries and rural and agricultural development in respect of the third world countries.

Thus, rural development became the special focus of adult education in the 1960s in the face of impoverishment of rural areas and the need for agrarian reforms. Training the adult farmer in new techniques and attitudes and training in cooperation and management of credit. Agriculture tended to lag behind other sectors of the economic in practically all the under-developed countries, but still absorbs the greater part of their population (Unesco, 1972:15-16). Spearheaded by Unesco, the Experimental World Literacy Project (EWLP) was implemented in 11 countries in Latin America, Africa and Asia.

During the decade of 1960-1970, the adult education programme was mainly geared to economic objectives. Especially in countries like India, Ceylon, Burma, etc., "the Green Revolution and the upliftment of the conditions of the peasantry" was the practical strategy in pursuance of the economic objectives of adult education. Implemented as part of the EWLP, the early success of the Farmers Functional Literacy Programme, as evident in its evaluation, pointed to the need for similar functional education programmes wherever a new technological breakthrough occurs in an economically backward country with a high agricultural potential (Unesco, 1972: 17).

"A Turning Point for Literacy" and the Conscientisation Approach, 1975-1980: The Declaration of Persepolis in 1975 positioned literacy as an instrument of critical consciousness-raising in relation to political, human and cultural process in general and the condition of illiterates, and leading to their liberation through a process of organization. This turning point was influenced by the assessment of the EWLP made by UNDP/Unesco and by

the Freire-inspired radical pedagogical movement in the early seventies. During this period, it was agreed in international discourse that functional literacy must be conceived and lead to broader objectives, set out in the programme.

The evaluations of functional literacy was critical of the approach and objectives which viewed its outcomes in narrow economic terms, and excluding women from participation in many cases of production skills taken up. It was seen as an attempt to market a pre-packaged product of literacy-linked to productive skills as the means for development and well-being. The evaluations were critical of leaving out other facets of life of individuals and selected groups from the purview of functional literacy (Lind & Johnston, 1990, 75; Unesco 1985:39).

The Conscientisation Approach to Literacy: Paulo Friere was the major spokesperson who positioned literacy and practice as an instrument to make it possible for the oppressed illiterates to become aware that they can change their own situation (Freire, 1972 a & b). The conscientisation approach implied that the main task of adult education is to bring about a process of critical reflection that leads to action and change. Education is seen an element in the necessary process of human liberation (Lind and Johnston, 1990: 79).

Paulo Freire did not provide any theory of how to organize a literacy project administratively nor of its evaluation. His ideas about pedagogy and training and motivation, mobilization and engagement of learners in the T-L process and the content served as the basis for emulation across the world. His influence in shaping the view and objective of literacy in the International Conference on Adult Education was unmistakable. The first nationwide Adult Education Programme in India was inspired by his views and objectives.

Mass Literacy Campaign Approach: The mass literacy campaign (MLC) approach that India adopted in 1990s was late in coming, which had a fairly good run across many different countries starting from the 1960s, through the 1970s and 80s cutting across Vietnam, China, Cuba, Nicaragua, Burma, Brazil, Tanzania and Somalia. Even while the EWLP was in full swing in the late 1960s, and Paulo Freire's ideas were inspiring adult education programmes in many countries, and there was an attempt by Unesco to study the MLC approach (by HS Bhola, studying 8 MLCs, such as USSR, Vietnam, China, Cuba, Burma, Brazil, Tanzania and Somalia), and through an International Conference at Udaipur in 1982, and draw up a blue print for emulation of the MLC approach by many Third World countries with a heavy burden of illiteracy. The Udaipur Seminar adopted a Literacy Declaration for massive literacy efforts:

Only specific campaigns with clearly defined targets can create the sense of urgency, mobilize popular support and marshall all possible resources to sustain mass action, continuity and follow up. It is not enough merely to teach skills linked to general economic development if the poorer classes remain as exploited and disadvantaged as before. A literacy campaign must be seen as a necessary part of a national strategy for overcoming poverty and injustice. (cited in Lind and Johnston, 1990: 86-87).

India did not opt for the MLC approach, but opted for Mass Programme of Functional Literacy (MPFL), using the students of schools and colleges as an additional component of their educational dimension. The MLC approach had to wait at least till the close of the 1980s.

Education for All: The provision of basic education for all children and adults became a concern of the international community in the 1980s. Initially the mood of the late 1970s led to the promotion of mass adult literacy campaigns for the purpose of "eradicating illiteracy

by the year 2000". As a result of the onset of the grave economic recession in most of the Third World countries, there was a state withdrawal of commitment and involvement in all levels of education, more particularly, basic education of children and adults. In trying to re-assure the commitment for EFA, the Third World countries which were reeling under the crisis of economic recession and consequent structural adjustment, either totally withdrew from the education sector or paid attention only on formal primary education, to the neglect of adult education. Even when the EFA momentum returned with huge foreign aid, it came with severe conditionality. The result was the skewed priority within EFA to UPE and UEE, at the cost of adult literacy and adult education, and thus, pushing the EFA target deadline in respect of literacy and adult education farther and farther, from the initial deadline of 2000 to now 2015.

India, however, had a peculiar turn of events, viz., combining the EFA wave with an MLC approach in respect of literacy, and connecting it with the primary education as part of the EFA agenda. Even though India did not come under the revolutionary environment, it adopted the MLC approach with a radical content as in other countries, undergoing socialist transformation through the literacy campaign. In the case of India, there was an attempt to interlink literacy with primary education as part of the EFA, and also all other development departments so that the illiterates get the benefits of all anti-poverty programmes of the government. What is noteworthy is the radical content even in the absence of a revolutionary milieu, which gave a lot of hope both to the learners and the activists involved in the campaign implementation, and connected the fervour to push for UPE.

Content and Curriculum under NLM in Context of Global Scenario

The *Handbook for Developing IPCL Material* brought out by the NLM in 1993 served as the guidelines for development of learning materials for the TLC, and later also for PLCs. It was based on a pedagogic approach known as the Improved Pace and Content of Learning (IPCL), which drew heavily on numerous previous pedagogic methods. The dominant method used in developing the TLC primers was based on the eclectic or word or phrase method, wherein words and phrases served as captions of lesson/unit. This was seen to be helpful in connecting the word with the world of the learners (Directorate of Adult Education [DAE], 2003: 2).

The approach to development of IPCL materials was based on the considerations that (i) it would generate interest, motivation and confidence among learners and Volunteers; (ii) the materials should have characteristics, such as self-reliance in literacy level, as specified by NLM, besides functionality and awareness; (iii) the learning materials were expected to reflect certain nationally important core contents and also locally relevant contents (LRC); (iv) Functionality implied that information provided should be utility-oriented and of a practical value; and (v) Awareness implied imbuing critical understanding of the social condition — social predicament and their organization to overcome the impediments (DAE, 2003: 2).

The core contents were to include national integration, women's equality, conservation of environment and population education. Topics under national integration included secularism, equality, communal harmony, democracy, our heritage, freedom struggle, life sketches of freedom fighters, geography of India, development of scientific temper, panchayatiraj system, etc. The topics under women's equality were expected to include

equality of sexes, women's role in decision making, right of women to take up non-stereotype roles, education of girls, property rights of women, equal wages, etc. Conservation of environment touched issues like growing more trees, prevention of air and water pollution, etc. Population education was to relate to issues like small family norms, right age of marriage, immunization (DAE, 2003: 5-6).

The LRC were to relate to health, social, economic and cultural issues. Health issues could include aspects like health and hygiene of the house and surrounding, safe drinking water, prevention of diarrhea, nutrition deficiency and low cost nutritious food, etc. Social issues could relate to drinking, indebtedness, bonded labour, child labour, child marriage, female infanticide, history/geography of a district and state, panchayatiraj system, etc. The economic issues could deal with development and welfare programmes, loan facilities, cooperation, filling money order and bank and official forms. Cultural and entertainment included poems, stories/fiction, puzzles, riddles, proverbs, etc (DAE, 2003: 7).

Given its short duration, ranging from 12-18 months and the pre-occupation with literacy learning during the TLC phase, there was naturally a greater preponderance of the core content in the TLC primers and with very little scope for LRC. It was, therefore, during the PLC/PL&CE stages, through PL-Primer and other supplementary learning materials that LRCs were addressed (NLM, 1996). When dealing with learning materials at Post-Literacy Programme stage, the *Handbook* underlined that besides the aspects spelt out, but remained uncovered during TLC, it should be District-specific, rich in information about development programmes in districts — not to overload the learners, but a piece of information which would be of immediate use; some national concerns and entertainment contents like picture stories, comic strips, cartoons, folk songs and stories, interesting anecdotes, jokes, puzzles, bajjans, relevant information about on-going programmes, besides health and family welfare issues. These were drawn from PLC and PL&CE district primers and other learning materials (DAE, 2003: 102).

In a study of 6 Post-Literacy Districts across 6 states, the content and themes in the PL-I (Primer) and other learning materials were found wanting with respect to helping readers to analyse the reasons for their deprivation; make them aware of their cultural identity; the value system of our civilization, questioning attitude on blind belief and obscurantism. These were also deficient in their focus to restore the lost cultural identity of groups of people who have long been oppressed and very little effort to include dialects and local vocabulary, local knowledge and culture of neo-literates. At the same time, these learning materials were preoccupied with imparting information about government programmes (BGVS, 2002: 148, 154). Aspects of entertainment, fun and satire were completely missing especially the kind found in the stories from women's own oral discourses (BGVS, 2002: 164). This study also gives a clue to what the researchers were looking for and found it absent, rather than an analysis of the LRC that informed the learning materials. Such perceptions were indicative of the NLM policy sanction for scope of such variety of aspects in the learning materials (NLM, 1995b).

Especially, in respect of the learning materials regarding LRC at PL and CE level, there was a conscious policy of suggestive guidelines and leaving the discretion to the State Literacy Mission Authorities (SLMAs) and Zilla Sakshratha Samities (ZSSs), to develop district-specific materials. With close to 600 TLCs, over 400 PLPs and over 300 CEPs, there was ample scope to reflect the variety and there was also bound to be variations in the adequacy of covering the variety of issues in the learning materials. But the deficiencies in

the learning materials found in the PLC districts in different states also indicates that it depended on the perspective, vision and intellectual capabilities of the academic resource teams at the district and state levels (A. Mathew and R. Rajan, 2008).

The NLM *Guidelines* for evaluations of the Post-Literacy as well as for Continuing Education Programmes clearly stipulated theme-wise analysis of the collection of books in libraries attached to the Centres of PL and CE Programmes in the villages (NLM, 1995a; DAE, 2000; 2003). The periodic national conferences of evaluation agencies organized by DAE and NLM also served as sounding boards for NLM communications to the SLMAs and ZSSs pointing out such discrepancies and correctives in the matter of selection of books and other learning materials for the libraries in PL and CE Centres.

Resonance with Global Perspectives

The aims, objectives and principles that were to form the essence of curriculum and contents of adult education as envisaged by NLM were in line with those articulated in the Hamburg Declaration, 1997 and Belem Framework for Action, 2009. Given below are some thematic issues from the "Agenda for the Future" that were included in the "Hamburg Declaration" of CONFINTEA-V. These learning content implications-oriented thematic issues could be compared with the core content and LRC themes and topics in Indian literacy movement during 1990s and till NLM programmes lasted until 2007.

Hamburg Declarations, 1997

Adult Learning and Democracy: Challenges of 21st Century require creativity and competence of all citizens of all ages in alleviating poverty, consolidating democratic processes, strengthening and protecting human rights, promoting a culture of peace, encouraging active citizenship, strengthening the role of civil society, ensuring gender equality and equity, enhancing empowerment of women, etc. (Unesco, 1997: 27)

Promoting the *empowerment of women and gender equity through adult learning,* by raising consciousness about gender inequalities and the need to change these unequal relations; stressing the need to eliminate gender disparities in access to all areas and levels of education; appropriate education to end domestic and sexual violence; imparting awareness about adverse impact of globalization and structural adjustment policies, especially upon women; and, the need to emphasize adequate legislative, financial and economic measures to ensure women's participation in adult education (Unesco, 1997: 32).

Adult learning in the Changing World of Work: In the context of globalization and new technologies and its adverse effect on the secure livelihoods for all, the need for adult education to increase competencies, develop new skills and capacity to adapt to continuously changing demands of employment throughout working life (Unesco, 1997: 33).

Adult learning in relation to environment, health and population: Environment, health, population, nutrition and food security are intricately linked to one another in sustaining development. Caring for one leaves a positive impact on another; for instance, caring for environment by controlling pollution, preventing soil erosion and prudently managing natural resources has a direct impact on the population's health, nutrition and well-being, which, in turn, positively impacts on population growth and food availability. Without strong

emphasis in education on family issues, reproductive life cycle and population issues, sustainable development cannot be achieved (Unesco, 1997: 34).

Adult learning, culture, media and new information technologies: Promoting respect, understanding and cooperation between different cultures and peoples and making effective use of different media and new information technologies both as an objective and an instrument of adult learning (Unesco, 1997: 35).

Adult learning for all: the rights and aspirations of different groups: Despite recognition that the right to education including adult learning is a universal right of all people, the reality is that many groups still continue to remain excluded such as gypsies, nomadic people, ethnic groups, refugees, non-territorial people, disabled, prison inmates. Adult education should especially address all these groups by meeting a diversity of their learning needs (Unesco, 1997: 36).

CONFINTEA-VI: Belem Framework for Action, 2009

Belem Framework for Action adopted by CONFINTEA-VI in 2009 recommended, among others, that: (a) adult learning and education should cover a broad range of general issues, vocational matters, family literacy and family education, citizenship and many other areas besides, with priorities depending on the specific needs of individual countries; (b) lifelong learning "from cradle go grave" is a philosophy, a conceptual framework and an organizing principle of all forms of education, based on inclusive, emancipatory, humanistic and democratic values; (c) focus literacy provisions that is relevant and adapted to learners' needs and leads to functional and sustainable knowledge, skills and competence; (d) literacy actions should focus on women and highly disadvantaged populations including indigenous peoples and prisoners, with an overall focus on rural populations (Unesco, 2009: 2).

In sum, the learning materials used in the literacy movement under NLM in the TLCs, PLPs and CEPs were clearly in resonance with the Hamburg Declaration, 1997 and the Belem Framework, 2009. Some of the themes informing the learning materials cutting across the international arena, as evident in the Hamburg Declaration, 1997 and the Belem Framework, 2009 and the Indian context included: (i) universal values like democracy, social equality; (ii) empowerment of women; (iii) increasing competence of youth and adults to ensure learning new skills according to the changing world of work; (iv) effective use of media and information technologies with due respect to different cultures and peoples; and (v) ensuring inclusion of different excluded groups in adult learning, as part of the rights perspective and addressing their specific learning needs, including livelihood-oriented skills.

Conclusion

Some of the salient points that pervaded the survey of perceptions about objectives, knowledge, awareness and skills related learning components in the content and curriculum of adult education through the different decades could be abstracted. One is the centrality and continuity of certain core dimensions of knowledge and values of adult education. Second is the precedence of certain focus of the components at certain programme format phases, at least in theory, not negating all other dimensions, but generally sidelining them, in the context of predominance given to certain specific aspects – the focus of adult education during different thematic and programmatic phases are cases in point. These two facets of

the profile of adult education also corresponds to the trends at the global level – the focus of adult education in India could be seen as a window to the trends in the world in the area of adult education, at least at certain phases. These continuities and changes are highlighted through the prism of curriculum and content focuses rather than as history of organization and management of the adult education programme in different phases.

Literacy and adult education was a political strategy of social mobilization to participate in the nationalist movement and hold the nation in highest esteem in respect of unity and diversity, and the desire for democracy as the vision of the nation. There was no mistake about this focus of adult education during the nationalist movement; besides these, adult education was to serve as the channel of social cohesion, solidarity, fellowship, etc.

Adult education spans across all facets of life and should address all the learning needs of all these facets. Adult education is not complete only with learning materials, howsoever comprehensive and all-inclusive. Its pedagogical scope includes, besides the curriculum and content contained in the syllabus, also awareness and learning by demonstration and hands-on. The efficacy and versatility of this approach was variously demonstrated through the various programme formats and the broadening of the vision of adult education and how to make it more effective. However, the basic core and crux of adult education has always revolved around health and hygiene, knowledge, awareness and skills to improve in economic condition and addressing other forms of socio-cultural, political and gender inequalities. However, its proactive conversion into reality in any substantive degree always eluded.

The pre-occupation of social education was an education in citizenship, democracy, community development. Values of democracy was the burden of adult education while the development perspective was on modern development, on building factories, dams and roads and formal education from lower to higher level, with specific emphasis on higher and technological education. This dualism on the part of the leadership was not in sync with the illiterate adults with respect to their life and its needs — the reason why social education did not even touch 3% of India's target population in respect of their participation (Shah, 1999).

Adult education had certain crux in respect of real emphasis in the lives of non-literate adults in rural and urban areas — literacy, health, livelihood and socio-political participation without exploitation and oppression. Whenever all these concerns were addressed effectively, there was no problem about learner response — the much dreaded prospect of lack of interest and motivation in adult education: the Gram Shikshan Mohim and the literacy movement during the initial years in the early 1990s are cases in point.

It is interesting to see that India dabbled for a time to validate the human capital approach that suffered in India from lack of sincerity with respect to the constituency it sought to address — the poor, landless and the rural illiterate adults. It also serves to remind about the fringe nature of the programme with reference to the concerns and needs addressed in India. The Farmers Functional Literacy Programme is a reminder in this regard. It must also be said that the FFLP was a classic example of the efficacy of learning and application as more effective and improvement-oriented. Adult education is a cross cutting by nature: it suffered on this score all through for lack of sincere effort.

This paper's pre-occupation with policy intentions and pronouncements served as the benchmark in designing curriculum and content and topics for learning. It must have been ideal to show and demonstrate the continuity and change in curriculum focuses from actual lessons through the primers and different programme forms over last 6 decades — for

scarcity of time and paucity of materials, only the lessons of primers from two States during TLC could be marshaled; but that illustrates the continuity of central concerns in adult education in a development milieu like India. The transition from national focus in aspects of learning to locally relevant and diversified content, as seen during the NFE phase was a slow build up to its centrality in policy perspective during the TLCs, especially in the PL and CE phases. More importantly, the FLAW programme was the harbinger of women needs-specific learning components in content and curriculum. It is another matter that it was a highly stereotypical gender reinforcing focus.

India was no Vietnam, China, Tanzania, Cuba or Nicaragua in respect of a society under a socialist transformation. Yet under the NAEP, there was a breath of fresh air about literacy becoming a hope for the exploited, oppressed poor illiterates in rural and urban areas as an instrument of liberation. The channel was critical pedagogy through dialogical process, organization and active participation in the development process to secure the benefits of the anti-poverty laws and schemes. NAEP stood out, with an agonizing briefness, as a hope, soon to disappoint, by its supersession by other programmes with only lip-service in the content and intent of curriculum and pedagogy.

As an internal reiteration and benchmarks for organizing adult education in an incrementalist milieu and perspective, a few key points underscored by the Review Committee on NAEP have been portrayed such as development with social justice, family planning, health care, cultural creativity, etc. In hindsight and retrospect, one could appreciate how such stresses continued to guide and pervade curriculum and content in adult education ever thereafter.

At least in respect of adult education, what is seen as the bible in policy domains, the NPE, 1986, its POA and even its revision in 1992 and the corresponding POA, seem to follow the perspective — knowledge, awareness, values and skills domains chartered in the Review Committee in 1980. It was shown to be a reiteration of the convictions of the Review Committee in terms of broadening and deepening of the content in respect of awareness and functionality. It is also a reminder about the policy premise in a non-revolutionary milieu like India that the illiterate poor can rise to their own liberation. The idea behind highlighting and dilating policy premises and operational elaborations is remind how these were guideposts for curriculum and content in the primers and other learning materials later on.

The eternal values of these incremental benefits in terms of aspirations of the oppressed non-literates about the vision of India, and also of the educated who design the vision of India through adult education are shown from the NCFAE. The comparison of India's literacy movement through the TLCs with the MLCs highlights the Indian engagement with the exploited and deprived non-literates on the agenda of at least partially addressing and redressing the impediments they face. It also shows that even the extremely limited success and scope in this direction is a deliberate and considered alternative to the status quo mentality and fatalism attitude of the non-literates — this direction as ethically and morally more edifying engagement on behalf of the poor and the pedagogy for a better India. It is sobering to observe the global perception about adult learning and education across the CONFINTEAs — I to VI from 1949 to 2009 as instruments of combating poverty, consolidating democratic values, strengthening human rights, eliminating social and gender inequality and fashioning a society without discrimination and ensuring learning and

education for all as basic human rights. The similarity of such visions is even sobering in the case of India, given its multiplicity of barriers to social and gender equality.

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Journal of Rural Development
Editor and Chairman: Dr. M V Rao, Director General

Vol. 32 **January – March 2013** **No.1**

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Journal of Educational Planning and Administration
Volume XXVII, No. 2, April 2013, pp. 203-208

RESEARCH ABSTRACT

A Study on Effectiveness of Computer Aided Learning (CAL) Programme under Sarva Shiksha Abhiyan at Elementary Stage in Odisha

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Title	A Study on Effectiveness of Computer Aided Learning (CAL) Programme under Sarva Shiksha Abhiyan at Elementary Stage in Orissa
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Degree Awarded	M.Phil
Date of Award of Degree	June 2010
Number of Pages	130
Availability of Dissertation	NUEPA Library (both in soft and hard copy)

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Abstract

In the era of recent advancements in information communication technology, the use of computers has become mandatory almost in all sectors. Thus, school education has been prioritized in this regard to emphasize technology which facilitates the teaching-learning process. CAL programme had been introduced under SSA to provide quality education to the students. For ensuring the success and impact, the present study measures the effectiveness and impact of CAL programme on school performance in terms of students' enrolment, attendance, achievement and teacher performance at elementary level in the selected districts of Orissa. Apart from these, study intends to know the present status, utilisation of CAL programme and existing policies under CAL which benefit the marginalised sections of students in school education. Since it is an experimental study, one tribal and one non-tribal district, having CAL programme were selected. Equal numbers of non-CAL schools were also selected from two districts. After sophistication of analysis through inferential statistics, i.e., composite score, t-test, ANOVA, likert scale method, it was found that the successfulness of CAL implementation indicated positive impact on the learning achievement, increase of enrolment and retention among students and performance of teachers only in non-tribal districts. There was no impact on the students and teachers in tribal district.

Introduction

Education plays a very important role in the formation of a progressive society. For all-round development, society requires skills, ever renewed knowledge, scientific culture and research effort. All these result from education. Education, therefore, makes substantial contribution to national income and its growth. Since education is a means for bringing socio-economic transformation in society, various measures are being taken to enhance the access of education to the marginalised sections of society. One such measure is the introduction of computers through Computer Aided Learning Programme (CAL) to facilitate the teaching-learning process both for students and teachers in the school education system in our country.

CAL programme under SSA is an effort to recognize the need for improving the performance of the school system and to provide community owned quality elementary education in mission mode. For this, CAL programme started in 2004, aiming at facilitating the teaching-learning process and making learning more joyful so that high enrolment, retention and achievement of students and less drop-out rate could be ensured. It can also empower teachers to enable them to enhance their abilities to teach and create learner-centric classroom processes with the use of technology.

The crying need in our elementary schools is to improve basic academic learning outcomes. For this the government has taken a number of initiatives that from time to time. Computers are useful tools in assisting the process of learning and acquisition of the academic competencies. This is commonly referred to as "Computers in Education" or the "Use of ICT in Education". ICT in education is a powerful tool that may be used effectively

and efficiently within the classrooms to create more exciting learning environment and deliver a higher level of educational expertise to the students. This not only makes the learning interesting and joyful but also incorporates innovativeness in their thinking and approach and enhances their imagination power. Most of the countries in the world have felt the need to incorporate the computer education and the use of Information and Communication Technology (ICT) in education. The developed world has a strong network facility and curricula for computer education in their schools even at primary level. In this regard, a developing country needs more attention to make use of technology at this juncture.

Need of the Study

Learning has to become more student-directed, as learning needs to continue not only beyond compulsory schooling, but more importantly also as a lifelong enterprise. Only through student-directed modes of learning, one can learn, acquire 'productive' skills, problem-solving skills, independent learning skills and/or skills for lifelong learning. Learning has to be organised in such a way that learners can learn how to become (more/less) architects of their own learning processes, with the help of professional coaches (teachers and others).

To realize and fill the gap of the teaching-learning process in tribal areas, use of technology was felt to be a major decision, both by the state government and the central government. Tribal students would be able to understand the teachings very easily through technology, so that there was a felt need of using computers in the teaching-learning process, so that both teachers and student in tribal areas will be able to understand properly.

Significance of Study

NPE, 1986 & POA, 1992 and NCF-2005 also emphasized the use of educational technology with respect to ICT in elementary education to achieve the educational objective. MDG-2 also has given importance to use the ICT in the form of computer aided learning to achieve Universal Primary Education. It is, therefore, quite imperative to find their effectiveness to achieve the desired educational goals.

Technology has a greater role for teachers and students to use technology which can have impact on learning outcomes where it can also compensate for poorer-quality teaching. ICT can also be a medium to support and accelerate this educational transformation and can reduce costs, but not until we change how we make effective and efficient use of this limited resource. Computer Aided Education in primary schools does not aim at teaching intricacies and technicality of computers. It aims at providing joyful, interactive and interesting ways of learning through illustrations, examples and interactive tools particularly designed to emphasize on the hardspots of the regular curriculum of the subjects (like Mathematics, English, Science and Computer Literacy).

Objectives of the Study

The objectives of the present study were:

1. To know the present status of the CAL programme under SSA at elementary stage in the Mayurbhanj and Bhadrak district of Orissa.

2. To find out the extent of utilization of CAL programmes in the classroom of Mayurbhanj and Bhadrak districts of Orissa.
3. To study the existing policy of CAL programme under SSA to take care of social and cultural context of both Tribal and Non-Tribal students in the selected districts of Orissa.
4. To measure the effectiveness of CAL programme on school performance in terms of students' enrolment, attendance, achievement and teacher performance at elementary level in the selected districts of Orissa.

Methodology

Keeping the above objectives in mind, experimental study was followed to measure effectiveness of Computer Aided Learning Programme. Study was both qualitative and quantitative in nature for descriptive analysis of socio-cultural context and adopted policy measures.

Area of the Study

The present study was conducted in two districts in Odisha "Bhadrak (Non-Tribal) and "Mayurbhanj (Tribal)". The researcher selected two districts since one district found to be low in terms of its literacy rate, mostly geographically disrupted, hilly and tribal belt and the other district in the coastal area considered to be highly literate and non-tribal category. Within the two districts, 10 CAL & 10 Non-CAL schools were selected for investigation and assessment.

Sampling and Sample Size

Random sampling was done to select students in schools. Purposive sampling was adopted to identify and select the schools which must be in tribal region, having computer under CAL programme. For a scientific and logical representation of the sample, it was planned to cover 50% of the schools having computer aided education and other 50% schools not having computers. From both experimental and control schools, samples were drawn in same proportion. 5 CAL schools and 5 non-CAL schools each were selected from both tribal and non-tribal districts. Out of all 20 schools, 3 teachers and 5 students each were selected for representation. The four different sets of respondents identified for the study were (i) children; (ii) computer trained teachers; (iii) headmasters; (iv) functionaries like collector, DPC, BRCC, CRCC, pedagogy coordinator etc. This strategy helped to make the evaluation more exhaustive and comprehensive.

Tools and Methods of Data Collection

In the present study the researcher employed **interview schedule, questionnaire and observation** methods as tools for data collection. Structured interview schedule was used and questions were both close and open-ended. Apart from that, secondary school records of students were collected, along with physical verification made of all the installed computers.

Analysis of Data

In the present study, the researcher has used two types of methods for data analysis: qualitative and quantitative. All quantitative information collected from primary sources was processed by using computers through SPSS and all qualitative information was tabulated and analyzed manually. Then, statistical analysis through the help of SPSS was done. The independent variables of the present study were age, sex, caste, education, income and occupation. The dependent variables were educational status, economic condition, enrolment, retention and achievement of students. Multivariate analysis was done to get the required output. Besides this, independent sample T-test and ANOVA were used at certain points to know the significant difference between and within the means of two different samples. Likert scaling was used to measure the perception/attitude of teachers towards use of computers.

Major Findings

- The Computer Aided Learning Programme, which is named "Biju Pattanaik Computer Aided Education programme (BiCEP), is an innovative intervention by the Govt. of Odisha to provide quality education to students. It has been visualised to go a long way to create interest among the students to foster creativity, but with only a limited help to marginalised students in tribal areas.
- Creativity in many forms is visible among many students, like doing paintings on the computer, preparing different models of computers in thermo cool etc. Students who were low achievers in study started doing better in computers. The CAE is gradually increasing the confidence level of the students. Students in the tribal district have shown less interest in using computers as they are not able to understand the examples and language used in the CD.
- The increase in students' interest in study has its manifestation in the form of increased attendance and achievement level. Statistical results show that there is a positive impact on CAL programme on students' enrolment at elementary stage. Similarly, students take more interest to learn new things and love to learn through computer. Students' attendance rate was found to consistently increase. But relatively, there was no increase in students of Mayurbhanj district as compared to those in Bhadrak district.
- The t-test result showed a difference in performance of the CAE students as compared to students where teaching does not take place through computers. The CAE school students scored more marks as compared to non-CAE school students. Besides, difference was observed in the performance of boys & girls, urban & rural students, Class VII & VI students, the former doing better than the latter. Teachers have shown less interest and perceived generatively that the traditional teaching method has had better impact on students' performance. Otherwise, in non-tribal district, concept of using computer is well accepted.
- The result of independent sample t-test and ANOVA analysis exhibited a significant difference in the average achievement scores of students in the Class-V, VI, VII between CAL & Non-CAL and within the CAL & Non-CAL schools in the Bhadrak

district only. But there was a significant difference between in the average score of English and Mathamatics of tribal children in both years — 2006 & 2007, for the year class-V, VI, VII. Computer Aided learning has had a positive impact on students' achievement in the areas of coastal belt (Non-tribal district), whereas CAL has been a complete failure in the tribal district.

- The result of Likert scale method revealed that teachers were found to have favourable attitude towards use of computer in the teaching-learning process in non-tribal district whereas teachers' in tribal region had limited favourable attitude towards using computer. Their socio-cultural habits had restricted them to accept new modern technology and forced them to keep in their traditional settings. Regular local alcoholic drinking sometimes made them out of interest in using the computers in the classroom situation. In this way, the socio-cultural milieu does seem to have affected the acceptance of the new learning environment.
- Policy analysis revealed that involvement of private players in the major decision making process was welcome because they do actively provide their support in all spheres and monitor the programme in an effective way. But the social and cultural context of tribal children has not been taken care of properly in the content of CDs while it was prepared. Even the policy document has not given importance to the marginalised students.

Conclusion

The present study depicts an understanding of various factors that influence the use of computers by the students and school teachers. Therefore, the study has become helpful in making effective strategies and changes required in educational policy itself. Apart from that, the curriculum designed for the school children under CAL programme gets more attention to include the socio-cultural context of the marginalised children, particularly tribal students.

It is to be ensured that tribal cultures and social pattern of students need to be given importance in curriculum design, too. There should be such a separate mechanism, where decision of government bodies, private bodies and benefited stakeholders would be encouraged in taking final decision. Since parents, teachers or students are left out of developing the programme content, this need to be included in the policy-making committee. Local cultures, festivals, rituals need to be included in the curriculum so that the tribal children would be able to understand clearly to ICT content in the classroom situations.

Journal of Educational Planning and Administration
Volume XXVII, No. 2, April 2013, pp. 209-221

Book Reviews

DAVE, Meenakshi (2009): **Intelligent Otherwise: Identifying, Understanding and Tackling Learning Disabilities in Children,** New Delhi: Wisdom Tree, pp. xii+172, ISBN-978-81-8328-139-3, Price Rs.145/- (Paper cover).

Intelligent otherwise is about children who are intelligent, but have a significant and unexplained difficulty in learning. Probably their nervous system has not matured and there is neurological impairment. In such children, there is a significant difference between child's IQ and his/her reading, spelling and writing age. These children cannot absorb the things the way others do. The author points out that such children can achieve their full potential, if the teacher teaches using appropriate technologies designed to meet the child's learning style and appropriate needs. About ten per cent of school children suffer from learning disability.

In the foreword, Mrs. Sheila Dikshit writes that it is important to recognize dyslexia as a common learning disability, but more crucial is to provide proper support and guidance to the children suffering from it. A high level of motivation coupled with strong encouragement and mentorship are possible solutions leading to academic growth of children suffering from these problems. The challenging task is to make the teachers and parents aware of this problem and Dave's book makes a good general guide.

Learning disabled children have a disorder in one or more of the basic psychological processes involved in understanding and using language, spoken or written which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or do mathematical calculations. Such disorders include conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. This does not include children who have learning problems which are primarily the result of visual, hearing or motor handicaps or mental retardations. True learning disabilities may appear at almost any age during the infant and child development years. Probably, because of imperfect neurological development. The resulting frustration due to this disability may produce secondary symptoms of hyper-activity, in-attention or withdrawal although none of these itself is a learning disability.

The learning disabilities are divided into four categories; oral language difficulty – this includes problems in listening and speaking, called aphasia. It is usually associated with an injury or with an abnormality in the speech centres of the brain; basic reading skill. Such children have difficulty in reading, called dyslexia. They are able to read, but cannot comprehend what they are reading; written language difficulty. They have difficulty in spelling, hand-writing and written composition, called dysgraphia; and mathematical calculation and reasoning, called dyscalculia. The child has difficulty in learning mathematical concepts. There are three stages of identification, assessment and evaluation of learning disabled.

Samud T. Orton in 1925 studied children with language disability in Iowa, USA. He theorized that it stemmed from individual differences in neurological development (maturational deviation) that prevented them from learning the way most children acquire a command of their language, that is, by the whole word method. Inspired by Orton's work, Anna Gillingham developed a method for teaching learning disabled called bottom-up method. It started with individual letter sounds and eventually to the whole words. To help students encode what they learned, into their memory, she also introduced multi-reasoning instructional method, whereby children traced each letter and word with their fingers, thus adding another sense to the learning process, as they followed the letter's shape with their eyes, repeated the sound aloud and heard others saying them. It is noted that the Orton Gillingham Method and variations thereof continue to be among the most successful methods of instructions of the learning disabled. (Learning Disabilities in Harlon G. Unger (Ed.) Encyclopedia of American Education, Vol. 11, 2001).

Recently, speaking at the inauguration of Learn 2010 seminar on Inclusive Education, Dr. A.P.J. Abdul Kalam exhorted researchers to focus on isolating the main causes of autism and spectrum disorders using the latest diagnostic technologies. He stressed that identifying the genetic and an environmental factors that cause autism is the way to imparting proper training to children with special needs (*The Hindu*, March 6, 2010). The author says that to allow the learning disabled children to succeed, they should be provided with special ways of learning. Now, that computer based technology such as voice-to-text dictation software is available, they can be reassured that massy hand-writing and poor spelling do not matter, if they are proficient with word processor. Similarly, in mathematical disability, drill and practice software packages are available and use of calculators can help student improve his/her attitude towards mathematics as it boosts one's confidence.

There is a need to develop resource material and teaching technologies in Indian languages for children with learning disabilities. The book will be of interest to both professional and general readers interested in the education and development of disabled children. The author deserves the gratitude of the reader for her endeavor.

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P.C. Bansal

SAHOO, P.K., D. YADAV and B.C. DAS (eds.) (2012): **Quality in Higher Education: Issues and Processes,** Uppal Publishing House, New Delhi, Pages: xxv+469, Price: ₹ 1595.

The book under review is an edited version of 33 seminar papers presented in the UGC Golden Jubilee Seminar held at University of Allahabad, Allahabad, during 6-8 November, 2003. These 33 papers have been divided into five distinct sections viz, (1) Assessment Framework of Quality Aspect; (2) Alternative Approaches; (3) Globalisation, Networking and Regional Issues; (4) Open and Distance Learning Context; and (5) Value Perspectives.

With the expansion of enrolment in higher education institutions, the quality aspect is a growing concern. Quality benchmark and initiatives focusing on continuous improvement of processes, products and services through well planned and efficient management of higher education deserve serious consideration on the part of policy makers, administrators, faculty

and other stakeholders. Though there has been a fast expansion of higher education, the system of higher education in India is struggling to seek its global identity, curriculum renewal in terms of its relevance to market or job-oriented courses, regional imbalances, coverage of age-cohorts of the weaker sections of society, financing of higher education and issues and practices of privatization of higher education in the context of PPP Model.

The in-road of ICT in higher education is yet to make a dent in moffusil towns and cities. All these issues have to be addressed and some seminar papers have taken into account issues related to the quality , access, equity and accountability which play a vital role in maintaining credibility of higher education. Further, the open–learning system through distance mode requires a serious consideration in terms of its compatibility with conventional university education as well as its acceptance by those who demand it for furthering their curriculum vitae.

Issue of governance of universities and colleges under the relevant Chapter "Governance of Universities" lays emphasis on employability, relevance and excellence of academic programmes and facilities for development of attitudes, knowledge and skills essential for success in a profession. Two recent reports "National Knowledge Commission" (2006) and Yash Pal Committee Report (2009) on renovation and rejuvenation may serve as a referral point for policy directions on structural reforms in higher education for necessary growth.

Another important dimension of quality is to accredit through NAAC assessment procedure which in the present context have laid down benchmark/parameters for certification of NAAC accreditation.

The role of ICT in facilitating teaching–learning research and management of higher education is appropriately dealt with by some authors under Alternative Approaches Under ODLS, issues like teacher trainees factors, and curriculum its process and development of teacher competencies, nature of support services, material, media and technology and management of technology. Human resource potentials, evaluation strategies and products of teacher education programmes are highlighted as researchable questions. There are some case studies in the book as supporting research evidences regarding quality aspect of higher education. Mention may be made of "A Case Study of Cotton College "Developmental Trajectory of Higher Education: A Case Study of Western Orissa" and "Evaluation of Teacher Fellowship Scheme." Some of the major themes dealt in these seminar papers are under:

- Quality dimension as an absolute and relative concept;
- Policy issues related to quality dimension and institutional mechanism—Like UGC initiatives, NAAC and NBA which cover the process and procedures of accreditation;
- Framework for quality management—Quality Benchmarking (TQM and six Sigma), ISO 9000, Organizational Micro Analysis;
- Capacity building for quality management in higher education;
- Professional preparation of teachers in higher education;
- Examination reforms and semester system under graduate courses;
- Globalization, privatization and networking in higher education with foreign universities;
- Curriculum planning and management;
- Regional perspective of development;
- Values governing higher education and curriculum provision leading to development of values to peace, environment, self-sufficiency etc.

The concept of quality in higher education though defined in business .industry is applied in education sector too, the dilemma is that the expanding private sector involvement in higher education is based basically on business model and commercialization. It negates the positive strength. Do the objectives, mission and vision of institutions of higher education carry forward the quality assessment? A comparative analysis of the different organizations' working in the quality assessment and accreditation has found a place in the book which covers this aspect for the United States, United Kingdom. Australia, Nigeria, France, New Zealand, The Russian Federation, China, Japan and India.

In the context of globalization of education, it is pertinent to note that it should lead to help in removing the hegemony of the capitalist system in domination of the rich nations and corporations and the loss of the national identity and culture. It should bring about advancement through interaction with global professionals and experts in different walks of life, allow free flow of ideas, capital people and goods around the world"(208). Is it happening? The answer is that it is not happening. The paper entitled" Globalization, Privatization and Networking with Foreign Universities" suggests the strategic policy measures for net working with foreign educational institutions of higher education and another paper "Institutional Networking in Promoting Quality of Students Support Services" (pp. 213-237) tested the hypothesis of (i) the response pattern of learners on networking facilities shall be independent of their programmed and university background; (ii) the response pattern on networking facilities shall be independent of respondents background i,e. teachers and learners in the context of academic programme. The study is based on the sample of IGNOU and U.P. Rajarshi Tandon Open University (UPPTOU). The conclusion drawn from the study indicates "the existing networking/collaboration of open universities with other agencies for dissemination of information and communication technology facilities at local level. The support extended by open universities to the study centres for optimum use of media and technology based student support services is not well appreciated by students and teachers"(223).

On the whole, these 33 seminar papers in a compact volume are quite informative and cover the emerging policy issues. In some papers, some strategic suggestions have been proposed for improving the quality aspect and equity issues. However, some errors have crept in the publication which may be worthwhile for correction in the next edition.

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HASSAN Joya and Martha C. NUSSBAUM (eds.) (2012): **Equalizing Access: Affirmative Action in Higher Education in India, United States and South Africa,** Oxford University Press, New Delhi. ISBN No. 0-19-807505-7 (Hardbound), Pages: 273, Price Rs. 745/-

Affirmative action constitutes one of the central themes in the discourse on democracy and citizenship. The premise of equal dignity and equal worth of individuals, irrespective of their social location, is at the heart of the idea of democracy. The idea of modern democracy

in this mould is routed through an all encompassing concept of citizenship. Since citizenship is considered as all encompassing and enabling category of political belonging loaded with difference-blind principle of equal opportunity and equal liberty, there is hardly any possibility of acknowledging the socially and culturally embedded difference and inequality in any given society. The empirical studies, however, establish the point that group based differences and inequality can be limiting to the idea of citizenship and equality. Therefore, mechanisms like affirmative action get legitimacy not merely on the grounds of moral political philosophy but also for the reasons of empirically grounded necessities. This is one of the reasons that both the idea of democracy and citizenship, and their professed principle of equality are deeply contested. The way the idea of democracy and citizenship has unfolded in different parts of the world loudly speaks about the gap that exists between the theory and praxis of citizenship and democracy. The idea of citizenship weaved around the notions of equal dignity, equal worth, equal liberty and equal opportunity hardly gets grounded in a society defined by the multiple axes of inequality and exclusion. This is one of the main reasons that the idea of citizenship in its classic mode becomes a site of both affirmation and contestation. It is affirmed on the ground that it opens up possibilities of equal access and claims but it interrogated the way it unfolds in deeply divided and unequal societies.

The 'colour blind' and 'difference blind' approach to equality ultimately results into exclusion of certain communities and groups, and for this reason it proves to be limiting to the idea of citizenship in its inclusive mode. It conceals the structures and processes of inequality and exclusion that exist at different levels in a given society. Group based discriminations and exclusions cannot be simply done away with simplistic understanding and application of the principles either of equality or citizenship. The idea of equality in this case remains at the level of abstraction. A more grounded and substantive notion of equality cannot dismiss the imprints of social, cultural and political contexts. This is precisely the logic that necessitates alternative mechanisms to redress the problem of group based discrimination, disadvantages and exclusion.

Affirmative action is just one such instrument that can provide substance to formal equality and translate the notion of equality into working reality of group life in political society. This is one of the moot points that the book under review attempts to grapple with. Though the title of the book gives an impression that it is restricted only to the idea of affirmative action in higher education, the ambit and scope of the book is much broader and comprehensive. The book under review is an excellent collection of theoretically informed and empirically grounded papers on affirmative action. It looks at the affirmative action from a new perspective without losing the basic ground of the logic and substance of affirmative action. Introduction chapter of the book by Zoya Hasan and Martha C. Nussbaum is an excellent exposition of the theme of affirmative. Just twenty pages of the introduction chapter are endowed with in-depth insights, firm arguments and comprehension of the central theme of each of the papers in the volume. The language is lucid. Selection of words and style of presentation of the arguments particularly in the introduction chapter is engrossing and tempting not only for the researcher and academic working on the theme but also for scholars of other streams. It provides insight and informed opinion about affirmative action in higher education. Though there are many seminal contributions and pioneering works, notably by Marc Galanter, that have appeared during the past many years, the book under review is an important intervention in the area of debate on affirmative action. In

some respects, it marks a departure from the past. The central arguments advanced in last three papers on India, namely by Deshpande, Hasan and Parthasarthy, break new grounds for thinking and intellectual churning on reservation policy and reception of affirmative action in India. Though the thrusts of these three papers are distinctively different from each other, they collectively argue for rethinking on the issue.

The book assumes significance for three clearly identified reasons—first, it provides theoretically explored perspective on affirmative action; second, the papers in the volume address the issue of affirmative action in higher education, which is relatively a less explored area especially in India; and the third is its comparative context. Though the comparative context is limited to three cases only, it does provide a comparative perspective on the issue. The major part of the book is devoted to India and the US. There is only one paper on South Africa. There are numerous contextually specific cases of affirmative action. It may not be possible to cover all the cases in a single volume like this. However, one of the important cases with regard to reparation of group based exclusion and injustice could not find any place in the volume, i.e., the case of Malaysia. Inclusion of Malaysian case could have added additional insight into the problem. Despite these limitations, the book has successfully addressed some of the central issues related to affirmative action in higher education. A conference based edited volume has its own limitation but the book under review has attempted its best to overcome the limitations.

Many recurrent issues of affirmative action have been addressed in the book including conceptual, theoretical and empirical dimensions of affirmative action. It also explores the logic and mechanisms of reparation of group based discrimination and injustice. One of the important questions that the book attempts to answer is the concept of affirmative action itself. The concept of affirmative action is not accepted and applied universally in identical manner. There are many competing concepts that are used and applied interchangeably. Positive discrimination, protective discrimination, reverse discrimination, compensatory justice, reservation, quota system etc are some of the concepts that are especially notable in this context. All the mentioned concepts are principally concerned with issue of reparation of injustice and exclusion. However, the concepts do not imply the same meaning and method of reparation of exclusion, injustice and discrimination emerging out of one's social location. Each of the concepts is loaded with specific meaning. Each of the concepts captures specificity of historical and societal context of discrimination and exclusion. These concepts need to be understood in the context of their own specificity as they have evolved in their own social and historical contexts.

P.S. Krishnan makes this point very sharp. He arguably interrogates the use of the term affirmative action in India. He strongly argues for restricting the use of the term to the specific historical context of the US. To him, the concept of affirmative action should be restricted to the context of the US. It is in way capable of capturing the Indian specificity. He substantiates these arguments with historical context of the evolution of affirmative action in the US. Many scholars and academics may like to share this view. However, one cannot ignore the fact that the concept of affirmative action has come to occupy a significant space in the analysis of social justice in India over the past two decades. The term is used in India broadly to refer to the issue of reservation but it is not restricted to it now. It also connotes the concern of creating enabling environment for the disadvantaged groups with the support of the state sponsored policies, programmes and provisioning. In the given context, use of the term of affirmative action is not altogether irrelevant and unnecessarily stretched.

Therefore, Krishnan's objection to the use of the term in India may be textually correct and sustainable but it may not essentially pass the test of the empirical and contextual unfolding of the concept in India. Moreover, one cannot just dismiss the logic that the concept is loaded with. It is the logic that justifies the use of the term. This point has been made crystal clear in the introduction of the book itself. Hasan and Nussbaum do not lose the sight of the trajectories of the concepts. They have clearly outlined the differences. The dimensions of constitutionality and legality, and two different ways of articulating the concerns of reparation of injustice and discrimination are important grounds that inform the logic of the two different contexts of the use of the concepts in India and the US.

The point has been made clear in the introduction chapter of the book itself. It has been rightly pointed out that affirmative action "is typically used as the generic term covering measures of many sorts that are used to give members of traditionally disadvantaged groups a better shot at social advantage. (Such measures may include encouragement, recruitment and many non-formal types of support, as well as more formal devices, such as quotas or, to use the Indian term, 'reservations'). Among such measures, 'positive discrimination' has typically been salient—that is, giving an extra boost to members of disadvantaged groups in certain competitive contexts. Positive discrimination itself comes in many varieties: quotas or 'reservations'; preferences or priorities(for example, in hiring or awarding contacts); a specific type of numerical advantage, such as adding points to a standard test score; and finally, a much more informal and unqualified weighting of group membership as one among many characteristics relevant to a decision" (p.2).

Education is one such area wherein affirmative measures can bring in some fundamental changes in the life of individuals and groups. The volume unequivocally argues for affirmative action in higher education. It has been argued that affirmative action in education should not be seen exclusively in terms of economic gains. It can have larger perspectives and goals. Martha C. Nussbaum in her paper outlines at least six identifiable goals that can be pursued through education in societies like the US or India. The identified goals go beyond the confines of economic gains. Richardson also takes a position in this regard and argues that the logic of affirmative action must not be reduced to economic gains. Affirmative action can play significant role in realizing the larger societal goals in both the societies if it is allowed to operate in its true spirit. The paper on South Africa by Saleem Badat also outlines the larger context and goals of affirmative action in higher education. These goals are well reflected in the Constitution and the White Paper on higher education in South Africa.

Despite the sound logic, the idea of affirmative action is interrogated, contested and even vehemently opposed in both the cases of the US and India. The interrogations are not new. This has been a recurrent theme of claims and counter-claims around the idea of affirmative action and reservation. The papers in the volume collectively counter such arguments and claims.

The idea of affirmative action in higher is interrogated on many counts that include — the arguments advanced on the ground of merit, efficiency, equality, cost-benefits etc. The volume contests both merit and efficiency arguments. It argues," The popular debate frequently equates 'merit' or 'desert' with test scores. To do so, however, ignores the social factors that lie behind the ability to do well on a standardized test. Even tests such as the Scholastic Aptitude Test (SAT) in the US, which purports to measure potential rather than achievement, involve abilities that are cultivated by specific cultural practices…Tests that

involve specific subject matter learning are even more heavily dependent upon prior preparation" (pp. 11-12). The point made here cannot be denied.

The idea of achievement, merit or efficiency cannot be seen in isolation. These are determined to a large extent by social, cultural and locational context. Therefore, the papers in the volume find the efficiency arguments inappropriate. This point is well articulated in the volume. Unraveling the fallacy of efficiency argument is the main thrust of the paper by Prabhat Patnaik. Patnaik has forcefully countered the idea of efficiency as a negative factor of affirmative action. He goes a step further and argues that 'even a method that is inefficient may be justifiable on grounds of distributive justice and long-term effects'.

Though interrogating the idea of affirmative action merely on the ground of merit and efficiency suffers from the fallacy of limited worldview, some of the arguments and logic advanced against the idea of affirmative action may not be simply brushed aside. They are of many folds. Some of them appear to be very sound that cannot be simply dismissed in the first instance. They require serious thinking. The papers in the volume also acknowledge some of the challenges posed to the idea and method of affirmative action. Some of the papers point out the limitations of affirmative action, especially, in the case of India. Deshpande in his paper points out the limitations of affirmative action in higher education in the changing context of political economy and the emerging dynamics of society in India. He points out the emerging challenges that are being posed to reservation in India. He makes four pertinent points: i) reservation in the higher education has reached its limit and there is little scope of expansion. It cannot expand the opportunity for the disadvantaged beyond a point; ii) with the expanding role of private sectors especially, in technical and professional education, equity of access is a major problem; iii) there is an urgent need for complementary efforts to sustain and upgrade education in non-professional fields; and iv) within the groups that have been beneficiaries of affirmative action, the demand for sub-quota or other forms of intra-group differentiation is more likely to make its presence felt (p. 212). All the four points invite for a fresh perspective on reservation. Proposing a fresh perspective in this case does not imply to do away with the provision of reservation and affirmative action in higher education. Despite significant changes in Indian society and emergence of a significant number of SCs, STs, and OBCs, in the middle, inter-group inequalities are apparently visible. With the support of empirical data, Jayati Ghosh indicates the continuing need for affirmative action but also argues for broadening its scope (p. 257).

D. Parthasarthy in his paper 'After Reservation' specifically focused on the case of IITs breaks a new ground for understanding the dynamics of affirmative action. The concern of affirmative action in higher education in India gets confined merely to reservation of seats in higher and technical education. It has hardly been investigated as to how the students admitted on the ground of affirmative action are subjected to academic and social situation. Parthsarthy makes an arduous effort to unravel the difficulties the 'quota students' face in the institutions. Incidence of suicide by such students is just an extreme but their every day exclusion and discrimination is hardly taken into account in the discourse of affirmative action. The students admitted to the institution availing the benefits of quota are stigmatized, discriminated and subjected to 'living mode exclusion'. Needless to add, the identity stereotypes and stigma have far reaching implications on performance. This dimension has not been acknowledged and addressed appropriately in any public policy document. This is, of course, a complex question that needs to be addressed on urgent basis.

The prevailing discrimination and exclusion at the institution level is not a typical factor of India. It is equally prevalent in the case of the US. This is one of the reasons that Thomas E. Weisskopf prefers standardized test despite his strong reservations on standardized test and score. Any alternative mechanism to it proves to be more prejudiced and subjectively biased.

Joya Hasan's paper strongly argues for affirmative action for Muslims in higher education and professional and technical education. It was a kind of stigma to talk about reservation for Muslims two-three decades back. There was always a threat to be labeled as communal. But the situation has come to a point wherein a well intentioned academic and intellectual can hardly ignore the problem. Hasan's paper attempts to fulfil the intellectual responsibility with the support of arguments and data in a much nuanced manner.

Issue of Muslim reservation in legislative bodies, government jobs and educational institutions is one of the complex areas of debate on reservation in India. The issue has taken a new turn especially after the release of the Sachar Committee Report. Equally competing arguments are advanced both in favour and opposition of reservation to Muslims in India. Judicial pronouncements have added additional dimension to the issue. Despite the limitations imposed by the constitutionality and legality of reservation for Muslims, one can hardy dismiss the incidence of exclusion of Muslims in India. The claims of inclusion of Muslims have to be acknowledged which may not be essentially in the mould of reservation.

The book is relevant for scholars, academics and the people involved in the process of policy making. It is worthy of collection both for individuals, institutions and their libraries.

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BEGHETTO, Ronald A. and James C. KAUFMAN (eds.) (2010): **Nurturing Creativity in the Classroom**, Cambridge University Press, New York, Pages: xiii+424, (Hardbound).

The book is an edited collection of nineteen papers contributed by the authors belonging from USA, UK and Russia, focusing on the issue of how to nurture creativity in the classroom. The editors tried to bring creativity at the centre stage by describing how educators and students together can make this drive possible along with the prescribed curriculum in the schools. According to Nickerson the suggestions posed by him to nurture creativity, 'none of these suggestions requires the expenditure of extra time by the teacher or the introduction of additional or non-standard subject matter' (p. 4).

The next chapter by Baer and Garrett focuses on the choices to be made by teachers as there is a lot of emphasis on the content standards and accountability in the teaching profession. Renzulli and Wet have proposed an ideal act of learning under which there are three components namely, teacher, learner and curriculum which influence one another and create an environment of nurturing creativity. They also propagated the multiple menu model which states that the curriculum is transacted well when there is a combination of content knowledge and instructional techniques and the outcome in such a case is based on the instruction based on the concrete and abstract products.

Baldwin offers the definition of creativity and suggests that there may be an attempt to look at the out-of-box thinking in the classrooms in which teachers must build the blocks of creativity. On the other hand, Stokes has a discussion on using constraints to develop creativity in the classroom in the context of mathematics teaching. The author gives the examples from the Japanese and American classrooms. The following chapter by Fairweather and Bonnie Cramond considers infusing creative and critical thinking into the curriculum together for nurturing creativity among students. But such an initiative is successful only if there is apt school environment for it in which there is a provision of how divergent and creative thinking through creative problem solving can be evolved in various subjects or through interdisciplinary approach.

Piirto has developed a model for creativity course for five core attitudes namely, naiveté, risk-taking, self-discipline, group trust and tolerance for ambiguity. He has also talked about the seven I's, i.e.: inspiration, insight, incubation, imagination, imagery, intuition and improvisation along with the general concepts like–creativity rituals, meditation, knowledge about demands/training in the domain, salon, exercise and process of life to be creative. Table 7.2 (pp. 149-150) provides examples from teachers of five core attitudes, seven I's which provide guideline for the teachers to construct an atmosphere for children to be creative which according to the author is a process of life. Sawyer puts forward a different view as there is no scope in the curriculum for the creativity and the arts due to the emphasis on mathematics and reading. The author focuses on fostering creativity in learners throughout the curriculum.

Beghetto and Kaufman argues that the teachers are themselves not clear what creativity means and how it can be integrated with the curriculum. Due to the pressure to meet the content standards, teachers often remain confined to the curriculum rather than the creative pursuits of the children. Richards has suggested seven points for creative learning namely: outer space, inner space, bravery–within oneself, bravery in the world, cherishing of creativity, ability to relate creativity, ability to relate creatively to each other and knowing of joy. There are also certain situations which the author argues are apt for creativity like a person is dynamic, conscious, healthy, non-defensive, open, integrating, observing actively, caring, collaborative, androgynous, developing and brave. There are also four areas for educational focus based on the "Four P's" of creativity and Cramond's (2007) programmes like: environmental press, person, process and product (p. 218).

The chapter by Runco relates the creativity in education based on Parsimonous theory which is the central tenant of the scientific method consistent with reliable data. The hierarchical framework for the study of creativity is demonstrated by the author (p. 240) based on the theories that focus on potential and actual performance. Skiba et.al. discuss about the importance of creativity in classrooms and focus on the priorities and weighing high stake assessments by integrating theory and classroom assessments in which the role of teacher is very crucial. The following chapter by Niu and Zhou discusses about the Chinese perspective of integrating creativity in mathematics. For this, the authors developed the 'Teaching Regulated Ability (TRA) Training Cycle' which provides TRA Cycle examples on lesson study; implementation and observation; reflection and improvement; and reflective reports. There are objectives and joint activity between expert and teacher based on the TRA cycle.

The chapter on creativity in England by Anna Craft talks about the various stages of work that correspond with the development of a child at various stages that is required for

nurturing creativity. The work is undertaken in an English context yet the author feels that this can be applicable in other political and social contexts also. The following chapter by Daniels and Piechowski described a different context where the gifted child is overexcited in the class through different forms and expressions namely: psychomotor, sensual, intellectual, imaginational and emotional. Such traits are fundamental attributes of a creative personality which go hand in hand with over-excitabilities. Hennesey holds the view that intrinsic motivation is the core to be creative that intersects with domain skills and creative thinking and working skills which is based on Amabile's creative intersection. The author emphasise on the fact that the confluence of a variety of environmental and person variables is necessary for creativity. The role of teacher is very crucial in developing the intrinsic motivation that is long lasting among the students.

On the other hand, attitude change is foundation for creativity enhancement according to Plucker and Dow. This is supported by the authors who have developed a new model of innovation enhancement that was implemented for an undergraduate coursework at Indiana University (Figure 17.1, p. 366). The findings from the study revealed some very interesting facts that the proposed model has the potential to enhance creativity. Halpern, on the other hand, has taken the discussion of creativity in the college classrooms. He argues that are critical and creative thinking are two different types of thinking? For which a personal experiment was carried out that showed some positive results.

Sternberg proposes the investment theory of creativity that is about a system of things like: intellectual abilities, knowledge, thinking styles, personality, motivation, environment and confluence. The research based on this theory shaped up the indices of developing creativity in students by encouraging them to create, invent, discover, imagine if…., suppose that… and predict. The concluding chapter by the editors lists out twenty key points and other insights for developing creativity in the classroom.

The book is very appealing as most of the chapters refer to the *No Child Left Behind Act of 2001* and illustrate that within the curriculum constraints also creativity can be nurtured. The role of teachers is central in bringing this into the classroom by creating an atmosphere of trust and independence provided to the students. The authors have provided concrete examples through their researches of how the curriculum can be blended with creativity for each and every subject. The teachers would benefit from this book considerably as there are methods and practical instructions of involving children into the process of nurturing creativity.

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LAWN, Martin and Sotiria GREK (2012): **Europeanizing Education: Governing a New Policy Space**, Oxford: Symposium Books Ltd., ISBN: 978-1-873927-61-8 (Paperback), Pages 173, Price not mentioned.

An assessment of Educational policies is of crucial importance for any nation. In this endeavour, an evaluation of the recent historical developments in the educational policy

frameworks is of paramount importance. In the light of these two objectives, the book under review assumes significance. Both the authors are experts in the field of educational policy and research, and they seek to utilize their expertise to define 'Europeanization of Education' and the challenges involved thereof. The 'chaotic uniformity' of the educational policies of the European Union surely makes their task no easy one.

There are as many as nine chapters in this book apart from introduction and conclusion. In the introductory chapter, the authors admit that 'studying European effects across the field of education has become a necessary and complex task'. What makes this task more complex is the fact that the EU nations have different political borders, and different histories of national policy documents, and varied languages and vernacular customs, and so on. This process of the Europeanizing of Education cannot but confront with three key elements: first, transnational flows and networks of people, ideas and practices across European borders; second, the direct effects of EU policy; and third, the Europeanizing effects of international institutions and globalization.

Besides, there is also the issue of whether to construct European integration as 'monotopia' (the idea of one-dimensional discourse of space and territory) or 'heterotopia' (the idea of different regional histories, language barriers etc.). In this scenario, comparisons become inevitable way of taking the Europeanization of education process forward. At the same time, one needs to recognize the new emerging European spaces. Thus, 'Europeanization is both a harmonizing and a dislocating process'.

Having thus introduced the issue at hand, the authors seek to investigate the various dimensions involved in the Europeanization process. First they take up the issue of Research and Policy in European Education. There is a rich detail of the role of 'world exhibitions', i.e., how the cross-border industries of education produced documents, brochures and images, and how these exhibitions through the 'international industry of education' acted as catalysts within the formation of national education systems. The travellers' accounts of the nineteenth and twentieth centuries also impacted the educational landscapes. The mid and late 20th century witnessed several radical changes in research and policy through the conferences conducted by UNESCO, and through the research centres such as the International Association for the Evaluation of Educational Achievement (IEA), and the International Institute for Educational Planning (IIEP).

In this discourse, the role of community dimension of education especially through vocational education through the 1970's needs to be understood. For the first time, a European nationalism, i.e., a 'determined cross-border effect, a new imperialism' emerged. As different higher education statistics emerged through different sources, 'a chaotic uniformity' in European educational scene was the inevitable result. However in the recent decades, the issue of 'governance by co-operation' and through cultural affinities and common identities have occupied the centre stage. From a 'chaotic uniformity', the notion of a 'networked cooperation' has irreversibly emerged among the European Nations.

Today, 'Governance' is a new paradigm, representing a shift from hierarchies to a set of institutions, both governmental and extra-governmental. A wide range of partners and organizations have a stake in educational policy and research. New strategic geographies are enhanced by network technologies. This new governance, however, works within the matrix of funding searcher, performance improvement and interest. The role of the 'experts', and the 'idea brokers' also assumes greater significance. Whether the governance of educational

policies has to be carried by the experts or by standards or both is another challenging dimension in this discourse.

The authors also focus on the 'second-wave policy' from 2000 to 2010 in EU Education scenario. The 'core' issues of 'quality' and 'efficiency' have come under increasing spotlight. The European educational space is being constructed as the interface between the states and EU offices, between offices and contractors, between academics and politicians, between experts and officials, and between consultants and researchers. Thus, a 'Europe of knowledge' has emerged in this decade.

There are also developments towards establishing common frameworks for measuring and coordinating the European space of education. The indicators and benchmarks are not seen to be possessing fixed identities, and it is amply clear that education in Europe is seen less and less static than ever before, and the indicators and benchmarks are invariably in constant flux and change.

The OECD (Organization for Economic Cooperation and Development) has emerged as a significant actor in governance of European education space, and it is already impacting the national education systems in Europe, especially through the Programme for International Student Assessment (PISA). The authors richly illustrate the impact of this programme with case studies with reference to Finland, Germany, Scotland and some other European nations. Finally, the book ends with some self-evaluation methods, citing the example of the Scottish Inspectorate.

The book, on the whole, is a major contribution to the debate on Europeanization of Education. It is certainly not for the lay reader, but for the experts and policy makers. The data and the case studies cited throughout makes the book more technical than interesting. Even the expert may find the line of argument repetitive, and at times banal. Nonetheless, the insights offered by the authors would surely open windows for further discussion and debate, and more importantly enable the policy makers to get their priorities right in bolstering the educational landscape in Europe.

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SHIN, Jung Cheol, Robert K. TOUTKOUSHIAN and Ulrich TEICHLER (eds.) (2011): **University Rankings: Theoretical Basis, Methodology and Impacts on Global Higher Education**, Springer Dordrecht Heidelberg, London and New York, pp. 271 (hardbound), ISBN: 978-94-007-1115-0

Global university rankings, though originated nearly a hundred years ago, became popular in recent years only. In fact, ranking of universities is becoming a global phenomenon and it became amazingly popular in a short time. At the global level, though there are not many, of the handful (about 27 in 2007), the Times Higher Education Supplement — QS World University Rankings (THE-QS), started in 2004, and the Shanghai Jiao Tong University's Academic Rankings of World Universities (AWRU), started in 2003, are the two most popular ones. Webometrics Ranking of World Universities (2004) and the US News and World Report (1983) are also popular in this regard. Apart from global

rankings, more than 40 countries have ranking systems of their universities. Ranking is also being attempted at regional levels, like Asian rankings of universities.

The university rankings are often quoted and used in academic and public policy purposes in various contexts. They are used to set benchmarks and improve their respective university rankings. There are several positive aspects of rankings but there are also several problems. However, one notices that there are not many studies that provide a critical and comprehensive account of the theoretical and methodological issues involved in the ranking universities.

The book under reviews fills up this felt gap to some extent. The purpose of the book is clear, as mentioned in the opening lines in the Preface: "the book is designed to provide the reader with a comprehensive understanding on university rankings schemes—its theoretical basis, methodological issues, and impacts on society" (p. v). The book serves this purpose very well. What it does not do, rather surprisingly, is a critical review of any of the prominent global ranking systems, or a comparative picture of these systems, though references to some of them are made by many contributors and their observations are relevant to one or the other ranking system.

The 13 chapters of the book are organised in three major parts, apart from a long and very useful introductory chapter by Jung Cheol Shin and Robert Toutkoushian. Part I presents a review of the theatrical and practical basis of university rankings; Part II presents a critical discussion on the methodology used to derive rankings; and the impact of the university rankings on a few major aspects of university development is discussed in Part III.

Jung Cheol Sin, Grant Harman and Ulrich Teichler in three separate chapters in Part I review a few methodological issues in evaluating quality, organisational effectiveness, how ranking systems consider organisational effectiveness, and the broad social context and consequences of university rankings. The meta-analysis of literature on ranking by Teichler in Chapter 4 presents a discussion of the rationale and hidden agendas of the ranking systems.

Global ranking systems are criticised for favouring certain types of universities and certain aspects of higher education, and ignoring the context in which the system operates and the unique missions and goals of universities. The universities may have social, economic and political priorities of their respective nations and regions. Functions and roles of each university are so diverse. But global rankings do not consider them. In fact, no global ranking system can capture the whole performance of the institutions, covering all aspects. The indicators considered are limited in number in all rankings. In this sense, global university rankings are really crude.

Different ranking organizations consider different indicators. AWRU focuses merely on research institutions; Webometrics measures the quality of the university's activities on the web; THE-QS focuses on 60 per cent on scientific research from British sources; and the US News and World Report concentrates on the programmes adopted in US colleges. Webometrics and Shanghai ARWU neglect mission, objectives and purposes of various universities and equate research universities with other universities. They also ignore financial, material, human resources and physical and other infrastructure available in the institutions.

The five chapters in Part II of the book concentrate on various indicators to measure institutional effectiveness and faculty productivity. It is necessary that ranking systems comprehensively consider research, teaching and service (extension) activities of the

universities in measuring productivity of the faculty and of the universities. Karen Webber reviews the methods and indicators to measure faculty of productivity.

Each of the ranking organizations also changes, though not very frequently, the indicators considered for ranking. In an international ranking, a university ranked 100th in a year, might rank much above 100th or much below 100th in the following year. Hence it is difficult to define precisely what the "best" university is. If the indicators are changed, the rankings change. The frequent change in the rank order of the given universities from year to year in a given ranking system, and variations in rankings of selected universities between several ranking systems raise several questions. Bernad Longden shows in Chapter 5, how rankings of the universities change often due to change in weights or by inclusion or exclusion of indicators. Though they are claimed to be objective, university rankings may not necessarily be objective, as the indicators and methodologies, including weighting of the indicators are based on subjective judgments of the people involved in making the rankings.

The rankings of universities have different kinds of impact on public policy and practice. In Part III, scholars analyse various aspects relating to social impacts. Globalisation and marketisation have their own effects on rankings and rankings, in turn, influence marketisation and globalisation. William Locke analyses the mutually reinforcing relationship between rankings and marketisation. Universities try to modify their missions and focus their attention to maximize ranking performance. 'Gaming' has also been a practice, and universities try to manipulate ranking by focusing on short term improvements to attain higher ranks. Discussing efficacy of rankings, Christopher Morphew and Christopher Swanson make four suggestions: recognise the inevitability of rankings; avoid the allure of rankings; recognise the importance of and buttress the university's reputation and, finally, beware of the isomorphic grip of globalisation.

University rankings are controversial, and one can state that there is no ranking that is welcomed by all. Reacting to some of the criticism, the ranking systems seem to be modifying their methods. The Berlin Guidelines, formulated in 2006, proposed a new method of rankings. The IREG (International Ranking Expert Group) Observatory on Academic Ranking and Excellence outlined the Berlin principles that covered areas such as include procedure on data collection and its verification, criteria, basic approach, methodology, and presentation and publication. The principles aim at ensuring transparency, and responsiveness. Some ranking systems seem to be responding to these guidelines and to general criticism. One can note that there is an attempt to continuously refine the methodology, selection of indicators, criteria for selection of universities. For example, the THE-QS that started the rankings in 2004, developed a new way of benchmarking universities in 2009. THE-QS in 2010 used 13 indicators covering research, knowledge transfer and teaching.

The generally claimed advantages of rankings are: they stimulate competition — healthy and unhealthy as well; provide valuable information to all about the universities, as they collect and provide a vast amount of information, useful to students, teachers, policy makers and other 'stakeholders'; they help in securing additional public and private funds; they make governments redirect their attention on quality and global standards and set up quality assurance mechanisms, and even think of setting up or developing world-class universities, so that at lest a few of these universities figure in the top 100 or 200 universities in the global rankings. Some argue that ranking can serve as an instrument to ensure transparency.

There are also several problems associated with rankings. Focusing on uniformity, the global rankings may actually narrow diversity that universities are normally associated with, and reduce the scope for innovations in strategy, curricula, pedagogy and research in the university systems. As the rankings ignore universities' specific missions and visions, and impose uniformity on all, they can even pervert university missions and distract the attention of the university administrators. Rankings may help, to some extent, inform institutional performance, but it is not certain that it helps in benchmarking performance. The most important criticism leveled against rankings refers to adequacy and relevance of indicators; the indicators chosen may not capture many important dimensions of the universities; and the ranking systems compare incomparable ones. Finally everything is converted into numerical indicators. But ranking cannot be definitive. Despite all these, university rankings are becoming increasingly popular and they are here to stay.

Though not all aspects covered in the book are new, the 13 scholar—contributors to this book, make it a good reading on what is becoming an increasingly important issue, for the graduate students and policy-makers as well.

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