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EDITORIAL

FORMULATING A NEW NATIONAL POLICY ON EDUCATION - A FEW STRATEGIES FOR IMPROVING HIGHER EDUCATION

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INTRODUCTION

Formulating a national policy is a difficult task for a nation with many variations in structures and resources among States. For instance, today, one finds approved student strength in a higher secondary class as 128, which is more than three times of the approved student strength in other States. The first Indian national policy on education was formulated in 1968 (Ministry of Education 1968). Eleven years later, in 1979, the government brought out a Draft Policy document (Ministry of Education 1979) which could not be passed. Seven years later, the second national policy on education was formulated in 1986 (MHRD 1986). Four years later, a committee (Acharya Ramamurti 1990), set up by the central government reviewed it. Before recommendations of this committee were utilised in revising the Policy document, there was a change in the Central government. Two years later, the CABE set up a Committee (Reddy 1992) to get this Acharya Ramamurti report reviewed. Basing on the report of this committee, the Central Government modified NPE 1986 (MHRD 1992).This modified policy document stated that various parameters of the policy need to be reviewed every five years, in addition to appraisals at short intervals, as per requirement from time to time.(MHRD 1992, Art. 11.5). After twenty four years of 1992 modification of the policy document, the process of reviewing the existing policy and developing a new policy document has started. The process of formulating NPE 1986 had its foundation laid on the deliberations initiated by a discussion document (Ministry of Education 1985) that listed various points of view and pointed out possible impacts of various suggestions. Present paper attempts to highlight certain issues related to higher education on which debates may be held to make the policy document more effective.

Policy makers generally depend on quantitative evidences as basis for policy formulation. Wu (2014), analysing Australian situation, suggested the need to go beyond quantitative evidence. Out of various aspects of a national policy, higher education occupies a significant position (MHRD 1992, Art. 5. 24). During last three decades, a number of international documents have highlighted importance of higher education. International Commission on Education for the Twenty First Century (Delors 1996, p. 130) stated that

> "Higher education is at one and the same time one of the driving forces of economic development and the focal point of learning in a society. It is both repository and creator of knowledge. Moreover, it is the principal instrument for passing on the accumulated experience, cultural and scientific, of humanity".

UN Recommendation Concerning the Status of Higher-Education Teaching Personnel highlighting various contributions of higher education hoped that the nations would treat public funds appropriated for higher education "as a public investment, subject to effective public accountability" (UN (1997 Art. 10). In order to draw the attention of the nations, in 1998, UNESCO came out with a World Declaration on Higher Education (UNESCO 1998), which highlighted the need for radical change and renewal to enable the society "transcend mere economic considerations and incorporate deeper dimensions of morality and spirituality." Higher education plays vital role "in knowledge societies, based on radical changes in the traditional patterns of knowledge production, diffusion and application" (UNESCO 2005, p. 87). A few strategic actions suggested for improvung higher education are: (a) addressing simultaneously demand and supply, (b) successful graduation and career development, (c) lifelong learning and on-the-job training, (d) encouraging private funding of higher education, (e) supporting financially constrained groups and income-

contingent loans and supporting services to socio-economic constrained constituencies (Veugeler 2011, p. 15). There is growing realisation of importance of higher education among nations (Altbach 2014, p. 11) . Areas in which challenges are being faced by higher education are : (a) expanding access, (b) promoting equity, (c) improving learning achievement, (d) strengthening knowledge generation, (e) technology transfer, and (f) encouraging desired values, behaviours, and attitudes among students(Systems Approach for Better Education Results 2016, p.1).

ACCESS TO HIGHER EDUCATION

Higher education, throughout the world, continues to avoid the principle of equal opportunity in education for all. Students from rich families continue to harvest better benefits from higher education by paying more. This issue is also reported in case of a developed and rich country like US. "It is difficult to engage in higher education policy without encountering alarm over the affordability crisis and its consequences for federal and state budgets, students and their parents, and institutions (Holcombe 2016, p. 3). " The insidious and growing gaps in educational opportunity and attainment between those with financial means and those without is one of the most serious issues facing higher education" (Finney, Perna and Callan 2014, p.10). According to Texas Higher Education Coordinating Board (2015), the state aspires to have at least 60 per cent of its 25- to 34-year-olds hold a certificate or degree by 2030. In US, Lumina Foundation (2015, p. ii) mentioned its goal to "To increase the proportion of working-age Americans with postsecondary degrees, certificates, and other credentials to 60% by the year 2025." Number wise 25-64 year olds having received tertiary education, in case of OECD countries was highest in US (74,147,000), followed by Japan (31, 340, 000) and UK (14, 595,000) and in case of non OECD countries was highest in China (74,086,000), followed by Russia (45,262,000)(OECD 2016, p. 42). Dropout and completion in higher education is an important issue, as higher education programmes require huge investment. Nations have not given much attention to this important aspect of investment in education. Europe is facing issues concerning tackling dropout and completion in higher education (Vossensteyn et al. 2015, pp. 9-11).

As the world advances, nations have been making efforts to make their higher education system more accessible to their citizens, so that they may be able to have increased contribution to their economy, not only by working inside the nation, but also by working outside the nation. These efforts have resulted in improved governance systems.

GOVERNANCE REFORMS IN HIGHER EDUCATION

Reforms in higher education governance are carried out in varieties of areas such as such as (a) increased autonomy to universities, (b) increased freedom in institutional funding strategies, (c) external quality monitoring, (d) ensuring accountability as per national norms, etc.(Fielden 2008, p. 43). Advanced nations are also not free from governance issues. There are issues related to tightening surveillance and monitoring of activity of universities in Russian higher education(Chaschin 2014, p. 244). Eight policy goals for tertiary education governance listed by World Bank (2012, p. 4) are: 1. Clear Vision for Tertiary Education; 2. Appropriate Regulatory Framework; 3. Capacity of the Tertiary Education Authority (TEA); 4. Leadership, Management and Organisational Autonomy; 5. Sufficient Institutional Autonomy; 6. Presence of performance-based and equity focused funding; 7. Checks on Quality and Relevance; and 8. Standards of Accountability. Although autonomy is the modern strategy, it "should not be considered as an aim in itself, but as a means to an end (Varghese & Martin 2014, p. 47).

Funding of higher education is an important issue. Owing to reduction in state funding, "the higher education system in many countries of Africa moved from a 'state-controlled' to a 'state-supervised' mode of governance in higher education" (Varghese (2016, p. 31). This is the reality in most part of the world. This change has given more opportunities to the rich to become more educated and get more income. This has also adversely affected health care facilities for poor. In many nations,

inability of the government to have its own medical education instittution have led to establishment of high fee charging institutions. There is a common notion that doctors produced from high fee charging medical institutions speed up the process of getting back the amount invested in education that adversely affects health care facilities for poor, who are subjected to many unnecessary tests, as the doctors get their share from these testing labs. This is an important government governance issue.

QUALITY OF HIGHER EDUCATION

Nations have been trying their best to improve the quality of their higher education. High level quality assurance processes need to take note of risks taken by the institutions (European University Association 2009, p. 7). High quality higher education institutions "define their teaching and learning objectives in relation to their study programmes and how they should be delivered and assessed"(McAleese 2013, p. 23). There is huge gap in quality of quantity and quality of appropriate human and material resources found among institutions of higher education in least developed, developing and developed countries. Today, higher education institutions in developed nations are struggling with various consequences of developments in technology having impact on student-centred learning (Hutchings and Quinney 2015, p. 106). In order to improve quality advanced nations have developed codes and standards.The UK Quality Code for Higher Education in following three parts: Part A: Setting and Maintaining Academic Standards covered (a) Qualifications and Frameworks, (b) Characteristics o statements, (c) Code frameworks and (d) Subject benchmark statements. Part B: Assuring and Enhancing Academic Quality covered (a) Programme Design, Development and Approval;(b) Recruitment, Selection and Admission to Higher Education; (c) Learning and Teaching; (d) Enabling Student Development and Achievement; (e) Student Engagement; (f) Assessment of Students and the Recognition of Prior Learning; (g) External Examining; (h) Programme Monitoring and Review;(i) Academic Appeals and Student Complaints; (j) Managing Higher Education Provision with Others; and (k) Research Degrees; and Part C: Information about Higher Education Provision (Quality Assurance Agency for Higher Education, UK 2014). In Australia, Standards for Higher Education mentioned in The Higher Education Standards Framework covered following seven areas: 1. Student Participation and Attainment; 2. Learning Environment; 3. Teaching; 4. Research and Research Training; 5. Institutional Quality Assurance; 6 . Governance and Accountability and Representation, Information and Information Management (Tertiary Education Quality and Standards Agency 2015). In United States, domains of student learning and development outcomes covered in General Standards developed by the Council for the Advancement of Standards in Higher Education (2014, p. 3) are: (a) knowledge acquisition, construction, integration, and application; (b) cognitive complexity; (c) intrapersonal development; (d) interpersonal competence; (e) humanitarianism and civic engagement; and (f) practical competence. While developed nations are having issues related to improving already high level of learning supported by technology, under developed nations are having issues related to lack of technology supported learning, which deter quality of learning.

ASSESSMENT OF QUALITY

Nations have been making efforts to improve their strategies for assessment of quality of higher education institutions. Quality higher education necessitates appropriate monitoring mechanism for higher education institutions. "Across higher education, it is time for a significant reappraisal of assessment strategy"(HEA, UK 2012, p. 4). High level quality assurance agencies go for more and more student involvement in their monitoring process (Quality Assurance Agency for Higher Education, UK 2015, p. 1). Nations rank their higher education institutions so as to enable them ascertain their position. Varieties of ranking are in vogue. U-Multirank is an addition to existing systems of ranking. "The development and publication of U-Multirank has changed the world of rankings by introducing a radically different approach: multi-dimensional and user-driven"(European Union 2015, p. 5). U-Multirank results are given indicator wise and indicate strengths and weaknesses of institutions.

INTERNATIONALISATION OF HIGHER EDUCATION

Internationalization Leaders Network (ILN) (2014) defined internationalisation of education as "process of integrating international, intercultural, and global dimensions and perspectives into the purpose, functions and delivery of education." According to Hénard, Diamond and Roseveare (2012, p. 7) home based internationalisation of education covers "incorporating intercultural and international dimensions into the curriculum, teaching, research and extracurricular activities and hence helps students develop international and intercultural skills without ever leaving their country." McBurnie and Ziguras (2009, pp. 106-107) expected that transnational education not only would lead to multi-dimensional delivery strategies, but also would lead to improvements in quality assurance mechanisms and refinement of guidelines. Vincent-Lancrin (2009, pp. 69- 73) reported increasingly emergence of new forms of cross-border higher education such as following a higher education or post-secondary course provided by a foreign university without leaving their own country, distance education – which includes Internet training (or e-learning), university partnerships (exclusively based on the principle of non-profit collaboration), cross-border education of a commercial nature in the form of franchising and twinning, opening of campuses abroad by universities, and of training centres abroad by other educational service providers, grouping of offshore campuses in regional clusters, changes in the financing models of campuses abroad and offering of master and doctorate programmes by top class universities on invitation from national governments. There has been rise in number of national students going abroad for higher education.According to Institute of International Education, US (2016 a), during 2014/15 number of international scholars in US was 124,861. Percentage of students from various countries were: China (32.2%), India (8.8%), South Korea (5.9%), Germany (4.3%), Canada (3.7%), Japan (3.6%), Brazil (3.5%), France (3.4%), Italy (3.1%), Spain (2.3%), United Kingdom (2.1%), Turkey (1,8%),Taiwan (1.5%), Mexico (1.3%), Israel (1.2%), Iran (1.2%), etc. According to Institute of International Education, US (2016 b), during 2014/15, total of number of international students in US was 974, 926. Country wise highest numbers of students were from China-304,040, followed by India-132,888, South Korea-63,710, Saudi Arabia- 59,945, Canada- 27,240, Taiwan-20,993, Japan-19,064, Vietnam-18,722, Mexico - 17,052, Iran- 11,338, United Kingdom-10,743, Turkey 10,724, Germany- 10,193,etc. Analysis of country wise data indicate that even in poor countries, there are rich people, who send their children to US and other developed nations to have better quality education. According to UK Council for International Student Affairs (2015) in 2014-15, in case of non UK students, largest numbers of students were from China (89,540). Other nations / national regions having more than ten thousand students were: India (18,320), Nigeria (17,920), Malaysia (17,060), USA (16,865), China-Hong Kong (16,215), Germany (13,675), France (11,955), Republic of Ireland (10,905), Italy (10,525, Greece (10,130). Percentages of students in various subject areas in UK higher education institutions in 2014-15, were: Business & administrative studies (38.4%), Engineering and technology (33.1%), Law (26.3%), Architecture, building and planning (25.4%), Mass communications and documentation (23%), Mathematical sciences(21.6%), Computer science (20.4%), Social studies (19.8%), Veterinary science (18.9%), Languages(17.7%), Creative arts and design (16.2%), Medicine and dentistry (16.0%), Physical sciences (15.8%), Agriculture and related subjects (12,4%), Historical and philosophical studies (10.9%), Biological sciences (10.8%), Subjects allied to medicine (7.7%), Education (6.1%), Combined (6%) and TOTAL (8.9%). According to Al-Sindi et al. (2016, pp.12,13 and 15), main provider of cross border higher education (CBHE) in the gulf region was United States, the main providers in Asia Pacific Region were Australia, United Kingdom and the United States, and in European region were France, Germany, Spain, and the United Kingdom. Generating income from international student tuition fees is one of the goals of internationalisation of higher education, This has motivated many universities in developed and also in developing countries to continuously innovate.

Internationalisation of higher education has also contributed to development of cultural awareness among students (Helms 2015, p. 23). Institutional internationalisation has become "diverse and multi layered, with potentially competing and contradicting rationales" (European University Association 2013, p. 11). State needs to play its quality ensuring role, especially in situations having large numbers of private providers and foreign campuses (UNESCO 2013, p. 5). A few issues identified in

the fourth global survey of internationalisation of higher education conducted by International Association of Universities (Egron-Polak and Hudson 2014, p. 7) were: commodification / commercialisation, brain drain, difficulty in assessing quality of foreign programmes, risk of growing gaps in quality and/or prestige among institutions in a given country. More and more nations are having students of other nations in their higher education institutions, with the intention to raise their financial standing. This necessitates that national governments ensure delivery of programmes of appropriate quality so that foreign students are not exploited. Internationalisation of higher education in sub-Saharan Africa has brought issues like "brain drain, cultural values, the commodification of higher education, the persistence of inequality between global north-south universities, and so on" (Alemu 2014, p. 71). Appreciation of "mobility programmes and of involving foreign lecturers in either teaching or research collaboration, were reported by academics in Slovenia" (Flander and Klemenèiè 2014, p. 44). Developing countries may not benefit from internationalisation, especially, in the form of programmes of universities of developed countries. In African situation, faculty-led short programmes of the universities coming in from the North can be labelled as academic tourism that potentially compromises academic values and principles (Jooste 2015, p. 11). Uncontrolled international education industry can destroy academic values and principles (Directorate-General for Internal Policies of European Union 2015, p. 286). A few values and principles suggested by International Association of Universities (2012, pp. 4-5) are: academic freedom, institutional autonomy, social responsibility, equity in access and success, non-discrimination, scientific integrity and research ethics, engagement with the community, internationalisation of the curriculum, appropriate treatment of international students and scholars ethically and respectfully in all aspects of their relationship with the institution, innovative forms of collaboration, and safeguarding and promoting cultural and linguistic diversity among students, study of impacts of internationalisation. According to European Commission/EACEA/Eurydic 2015, p. 264), poor quality of internationalisation of higher education is marked by factors such as (a) Lack of a national internationalisation strategy or guidance to the various stakeholders involved in the internationalisation process; (b) inadequate stress on promotion of economic, social, and cultural well-being of communities; and (c) Inadequate opportunity for talented, but poor students. As nations vary in their demography and culture, effect of internationalisation of higher education will vary from nation to nation. Krechetnikov, Pestereva and Rajoviæ (2016, p. 229) reported that Asia Pacific Region countries, especially, were increasingly active in the process of internationalisation of their higher education. Nations make efforts to make foreign students accept new cultural scenario in the country of their study. In late seventies, when the author reached Edinburgh as a British Council Scholar to pursue Diploma in Community Education, the university had arranged a group of local students to receive the foreign students at the railway station. It was late September. The first business of volunteer attached to the author, after formal welcome, was to make the author buy a duffle coat to save him from Scottish cold weather. The university host team had arranged afternoon tea in many houses for many days. Acar (2016) in a study of faculty perception of international students in Turkey reported challenges such as education system different from their own country, difficulty due to variation in spoken accent and separation from family and isolation. Surtees and Balyasnikova (2016) reported about effective role played by the culture clubs in Canadian universities. Student exchange programme is the most important contribution of internationalisation of higher education to improve the standard of higher education, especially improving the level of learner experience and expertise. Alvarez, Kilbourn, and Olson (2016), in a study of the experience in three nations, reported that the collaborative learning environment made the students overcome their language differences, and gave them knowledge about another culture and experience alternative ways of teaching. Chuah and Singh (2016, p. 140), in their study of international students in four universities of Malaysia, recommended a more conducive support network for international students that may enable them enjoy a more favourable, all-encompassing curriculum.

Cross border higher education is a growing aspect of internationalisation of education. Some of the principles of cross border higher education, according to the Council for Higher Education Accreditation (2015) are : (a) Striving to contribute to the broader economic, social, and cultural

well-being of communities; (b) Strengthening higher education capacity of developing countries; (c) Striving to instil in learners the critical thinking skills; (d) making higher education accessible to disadvantaged; (e) meeting the same high standards of academic and organizational quality no matter where it is delivered; (f) making oneself accountable to the public, students, and governments; (g) Expanding the opportunities for international mobility of faculty, researchers, and students; and (h) Providing clear and full information to students and external stakeholders about the education they provide. In the report of 4th survey conducted by European Association for Quality Assurance in Higher Education (ENQA), Grifoll et al. (2015, p.5) stated that "Overall, the diversity of activities undertaken by agencies suggests that there is not yet a single, shared definition or profile for the internationalisation of quality assurance." Al-Sindi et al. (2016, p.41) stated that nations should (a) support higher education institutions in fully harnessing the opportunities and benefits associated with CBHE, for both sending and receiving countries; (b) support QA agencies in facilitating and supporting the development of the required national capacities for the quality assurance of CBHE and inter-agency cooperation; (c) facilitate the development of regular and reliable data collection systems for inbound and outbound CBHE at the national level; (d) engage in a dialogue with QA agencies in order to identify and review any unnecessary policies or regulatory restrictions and initiate any required reforms which would facilitate the quality assurance of CBHE and cross-border cooperation in the spirit of the QACHE Toolkit; and (e) develop, together with all relevant stakeholders, clear policy frameworks. As recommended in the QACHE Toolkit, QA agencies should "have clear and accessible policies for the quality assurance of inbound and outbound CBHE.

TEACHING LEARNING QUALITY IN HIGHER EDUCATION

Geographical, historical, cultural and linguistic context in which students live plays significant role in learning (UNESCO 2016, p. 11). Generally, professional development programmes for higher education teachers do not cover above aspect of teaching - learning. IMHE (2009, p. 5) reviewing status of teaching quality in higher education in OECD nations stated that "Encouraging bottom-up initiatives from the faculty members, setting them in a propitious learning and teaching environment, providing effective support and stimulating reflection on the role of teaching in the learning process all contribute to quality teaching." The process of improving instructional quality of academic staff of higher education institutions can be hastened through programmes delivered by appropriately staffed campus-based professional development centers (Asian Development Bank 2011, p. 31). The process of improving teaching learning quality is witnessing situations marked by (a) inadequate programmes for professional development for HE teaching, (b) poor quality of programmes, (c) Confusion between teaching -learning excellence and research excellence, and (d) inadequate initiatives to scale up good teaching learning practices (European Union 2016 a). Learning communities concept could be beneficial for the "neglected half" of university teachers' competencies (Požarnik and Lavriè 2015, p. 91). Not only lethargy, but also ignorance plays vital role in poor performance of teachers, especially in case of institutions giving in adequate salary and not providing adequate material resources including appropriate library and computer and internet facilities.

OPEN LEARNING AND PART-TIME EDUCATION

Formal open learning systems in higher education were initiated in 1963, when in UK, the Labour Party proposed "University of the Air". This term was changed in 1967 to "Open University". Essential characteristics of open learning systems listed by the National Association of Educational Broadcasters of the US are: 1. Guiding a student by eliciting, interpreting and analysing goals at the beginning point and throughout the student's contact with the programme of instruction; 2. Formulating learning objectives in such a way that they serve as the basis for making decisions in instructional design, including evaluation, and in such a way that they will be fully known to, accepted by or capable of modification by students; 3. Facilitating the participation of learners without imposing traditional academic entry requirements, without the pursuit of an academic degree or other certification as the exclusive reward.; 4. Providing the flexibility required satisfying a variety of individual needs, the system should make it operationally possible to employ sound,

television, film and print as options for mediating learning experiences.; and 5. Using testing and evaluation principally to diagnose and analyse the extent to which specified learning objectives have been accomplished. In other words, the system should be competence-based; and 6. Being able to accommodate distance between the instructional staff resources and the learner, employing the distance as a positive element in the development of independence in learning (MacKenzie et al. 1975, pp.16-17). Growth in online resources and also interest to continuously update oneself has led to growth in part time education. In UK, flexibility aspect is the s key attraction for part-time study (Pollard, Newton and Hillage (2012. p. 268).

PRIVATISATION OF HIGHER EDUCATION

Privatisation of higher education, in its early phases, was a philanthropic activity. Individuals established institutions in the name of their late father or mother or beloved and continued to financially support so that this institution could be treated as an alternative to similar institution run by the State. In course of time, philanthropy got replaced by industry for profit. In US, most top-ranked universities are private (European Union 2016 b, p. 54). Many international reports place private institutions as inferior ones. Even the quality monitoring agencies are found penalising private institutions, although they do not do so for government institutions for the same handicap.

For improving quality of private higher education in Asia, it is necessary to strengthen quality assurance and accreditation procedures for private higher education institutions, explore alternative funding models and promote a system that brokers international partnership opportunities (Asian Development Bank 2012, pp. 27-29). In Asia, nations witnessing massive privatisation of higher education need a high quality regulatory system to manage massification (Varghese 2015, p. 27). In Africa, increase in access to higher expansion " is on a capacity-to-pay principle" (Varghese 2016, p. 32). In India, privatisation has been flourishing in the absence of appropriate provision for government owned higher education institutions (Yash Pal 2009, p. 32). Privatisation of higher education and its accompanied ills are harmful for nations supposed to ensure equal opportunity for its citizens, as privatisation benefits the rich. There are philanthropists, who have created good private institutions. However, there are also many profit makers, who have created private institutions. Now in many nations, setting up a private institution is more profitable than setting up an industry. When demand for a particular course is very low, the organisation goes for another course or for utilising the material resources for having a residential school or starting other profit making courses. Institutions maintained by the governments also have been going for indirect privatisation by having self-financed courses, which often have the same evils as found in case of programmes / courses offered by private higher education institutions in spite of existence of regulatory authorities.

REGULATORY BODIES FOR HIGHER EDUCATION

Nations are making efforts to improve their regulatory strategies so that institutions are motivated to perform better. "A good governance structure and favorable regulatory conditions can promote innovative behavior among tertiary education institutions..." (Systems Approach for Better Education Results (SABER) (2012, p. 1). Unfortunately, there are instances of government institutions and universities taking advantage of their position and not sticking to the norms of the regulatory bodies and the authorities working for regulatory bodies also avoiding their responsibility to enforce norms on government institutions or universities (Mohanty 2016 a & b). Sixteen years ago, a Committee had been appointed by the Central Government of India to review higher education and suggest strategies for improvement. This Committee (Yash Pal 2009, p.63) had recommended replacement of the regulatory bodies by an all-encompassing constitutional body - National Commission for Higher Education and Research (NCHER). Successive governments have not been able to accept this recommendation, although there have been many studies that point out inappropriate functioning of these regulatory bodies. In order to improve efficiency of regulatory bodies for higher education, in a review of quality of higher education in England, UK, the University Alliance (2014, p. 4) recommended a single regulatory body for all higher education providers in England. According to Altbach (2009, p. 199) China and India would play a major role in global higher education, as these

two countries will be dominant nations sending students overseas, but also a future hub of Asian students (India as a hub for South Asian students). Marginson and van der Wende (2009, p. 44), commenting on situation in India, reported that "Despite India's concentrations of technology-intensive industry and its global role as supplier of ICT labour, government dependent basic research has been slower to develop than in East Asia and Singapore."

A FEW UNFULFILLED STRATEGIES OF NATIONAL POLICY ON EDUCATION 1986 (WITH MODIFICATIONS UNDERTAKEN IN 1992)

A few strategies mentioned NPE 1986 (with modifications undertaken in 1992), which have not been touched or inadequately covered are:

1. Setting up Indian Education Service (Art. 10.3);
2. Increasing investment on Education (Art. 11.4);
3. Setting up State Advisory Boards of Education (Art. 10.4);
4. De-linking of Degrees from Jobs (Art. 5.38 , 5.39 & 5.40);
5. Providing Training for Educational Planners, Administrators and Heads of Institutions (Art 10.5);
6. Improving Network Arrangements (Art. 3. 9);
7. Improving Evaluation Process and Examination Reform (Art. 8.23, 8.24 & 8.25);
8. Having a Common Educational Structure (Art. 3.3);
9. Having State Councils of Higher Education (Art. 5.30);
10. Making the System Work (Art. 7.1, 7.2 &7.3);
11. Improving Teacher Quality (Art. 9.1, 9.2 & 9.3);
12. Consolidating and Expanding Facilities in Existing Institutions (Art. 5.26);
13. Checking Degradation of Higher Education (Art. 5.27);
14. Undertaking Performance Appraisals of Institutions (Art. 7.3);
15. Giving Stress on Autonomous Departments (Art. 5.28)
16. Ensuring Flexibility in Curricula (Art. 5. 29)
17. Improving Material Resources (Art. 5. 31)
18. Having Rural Universities (Art. 5.42)
19. Improving Assessment of Performance of Students (Art. 5.41)
20. Improving Students' Services (Art. 7.3)
21. Providing Yoga Education (Art. 8. 2)
22. Ensuring High Quality Instructional Materials (Art. 8.24)
23. Providing Opportunity for Continuing Education for Products of Vocational Courses (Art. 5.20 & 5.22)

A FEW STRATEGIES SUGGESTED FOR IMPROVING HIGHER EDUCATION

A few strategies related to certain areas of higher education are being given below for deliberation in various forums.

GENERAL

* Conducting surveys of participation of regular students in shadow education (Private coaching of regular students);

*Developing mechanisms to integrate learning through shadow education with learning in formal classrooms;

*Deciding a target year for covering at least 60 per cent of population aged 25-34 with a certificate or a degree in higher education;

* Conducting annual survey of completion and drop-out in higher education;

*Establishing central and state level Centres for Educational Policy Studies; and

*Giving autonomy to states to have their own education structure.

PROMOTING OPEN AND DISTANCE LEARNING AND ONLINE COURSES AND PART TIME EDUCATION

Making open universities have their own faculty instead of utilising the services and expertise of the regular faculty of face to face mode universities and institutions;

*Reviving the old system of allowing a person with a Higher Secondary pass certificate to appear at degree examinations as private candidates and a degree holder to appear at university post graduate examinations as private candidates;
* Promoting lifelong learning initiatives in its citizens by promoting part time education opportunities;
*Allowing an individual,without any qualification, to appear at university degree examinations as private candidate and making necessary modifications in acts of central and state universities and organisations conducting such examinations.

TRANSFORMING SOCIETY

* Bringing all educational programmes for SC & ST under one ministry - MHRD- Department of Higher Education;
* Making reservation for students from SC and ST communities in general hostels instead of establishing separate hostels for SCs and STs, which according to some may accelerate the process of integration of SC and ST community with others;
* Reservation for students from SC and ST communities in general colleges and universities instead of establishing separate colleges and universities for SCs and STs, which according to some may accelerate the process of integration of SC and ST community with others;
* Making all programmes / courses operating in university departments and centres and colleges of central and state governments charge no fee from students from parents not having specified annual income;
*Banning collection of seminar fee from post graduate students.

DEVELOPING THE BEST TEACHERS

* Making working in coaching centres or giving private coaching on payment a punishable offence for teachers getting regular salary;
* Empowering institution heads to engage teachers in appropriate institution related activities during the period in which they do not have to teach;
* Making evaluation of teaching skills get better weightage than evaluation of research publications, in case of evaluation of a higher education teacher;
*Making Teacher Eligibility test include assessment of skill in teaching and assessment of attitude towards teaching profession;
*Introducing a system of professional development of new teachers through mentors;
* Orienting higher education teachers in new forms of assessment of student learning;
* Introducing a system of peer observation and peer feedback for all higher education teachers;
*Having institution level professional development units to improve the quality of teaching faculty;
*Modifying scheme of Academic Staff colleges to make each university responsible for carrying out appropriate improvement in capabilities of its academic staff through its own Centre for Teaching and Learning;
*Making it part of duty of every higher education teacher to develop a list of reading resources including internet resources for topics to be taught by him / her and getting the list updated at the beginning of every academic session and copies of the list to be made availavble in the library for use by the students;
*Making it part of duty of every higher education teacher to develop an annotated bibliography of books and other resources, available in the institution library, related to topics to be taught by him/her and getting that bibliography updated at the beginning of every academic session, and copies of the bibliography to be made available in the library for use by the students;
*Making provision for a cubicle with a computer and internet facilities for each higher education teacher;
Making libraries of higher education institution remain open throughout the year, at least for 12 hours a day, from morning 7 to evening 7.
*Making it part of duty of all higher education teachers including principals and professors teaching B.Ed./M.Ed./ M.A.(Education) or other types of courses related to Education subject, teach every year one unit of a school subject in a school.

*Making provision for two additional increments in salary for a lecturer in Education,who is required to have a M.Ed. degree (B.Ed. 1yr and M.Ed.1 yr)and another PG degree in a content subject, as recommended by Education Commission 1966 (Kothari 1966 Art. 4.41, p. 141).
Making provision for four additional increments in salary for a lecturer in Education,who is required to have a M.Ed. degree (2 yrs duration after B.Ed. of 2yrs duration)and another PG degree in a content subject, as per the above principle recommended by Kothari Commission.

MEANINGFUL PARTNERSHIP WITH THE PRIVATE SECTOR

*Encouraging and recognising private initiatives for assessing institutions and their programmes;
* Making statutory bodies ensure equal stress on application of norms and standards on courses and programmes offered by private and government colleges and departments and colleges of private and government universities;
*Empowering heads of institutions to allow private individuals, with or without any formal qualification, for taking part in academic activities including teaching;
*Empowering institution heads to get funds from individuals and families for building rooms/ laboratories, gymnasia etc.
*Empowering institution heads to get material resources utilised by community, on payment basis.

INTERNATIONALISATION OF HIGHER EDUCATION

* Specifying minimum level of academic excellence for entry to a course, applicable for all communities including SC and ST and foreign students;
* Formulating principles for cross border higher education by foreign institutions in India and also by Indian institutions going abroad.
*Formulating criteria for self-assessment by these institutions.
* Having nation wise culture clubs in colleges and universities providing cross border higher education.
*Universities and colleges, admitting foreign students, organising one week orientation programme on Indian culture and laws for foreign students and another week of orientation programme for community leaders in culture of countries from which students are admitted.

IMPROVING GOVERNANCE OF HIGHER EDUCATION

*Transferring responsibility of giving funds to higher education institutions in states and UTs from UGC to state and UT governments and central government giving block grants to states and UTs and making appropriate modification in UGC act;
* Having posts of vice-chancellors filled up on rotation basis for a period of three years, from among professors of the concerned university;
*Making medical education free and taking over all private medical colleges by the government;
*Making initial teacher training courses offered in government institutions free.
*Giving responsibility to States to have their own accreditation bodies and central acts related to national level accreditation bodies get modified accordingly.
*Introducing registration system for shadow education (private coaching centres run at hones of teachers or in other establishments, on payment basis).
*Empowering universities and higher education institutions to raise funds by giving on rent their buildings and other material resources including playgrounds.
*Modifying autonomous scheme to give authority to affiliating universities and concerned state governments, instead of UGC to confer autonomy;
Not granting autonomy to colleges under managements (government and private) having more than one college under their control, if their teachers are transferable from one college to another;
*Making M. Ed. (Master of Education) Course open to any graduate.
*Having one year B.Ed. course of 230 days as suggested by Education Commission 1966 (Kothari 1966, p. 132), endorsed by Verma Commission 2012 (Verma 2012, p. 95);
Continuing two-year B.Ed. course in RIEs of NCERT, geared to initial teacher training for teaching in Navodaya Vidyalayas, with one year internship in Navodaya Vidyalayas and with appropriate higher salary scale of pay for such products;

*Having a model school teacher training institution run by the central government, in each state, for each level of school education;
*Making it mandatory for every university / college department and teacher training college running initial teacher training course for teaching at a stage of school education to have a model school in its campus by 2020, having classes of concerned stage of school education;
*Upgrading initial teacher training courses (Diploma, Certificate courses) for school teachers to higher education stage (Degree courses);
*Having uniform pattern of working days in all types of institutions including departments of Education in universities and colleges, offering intial teacher training courses have no vacations as found in case of Regional Institutes of Education of the NCERT. and making appropriate changes in service conditions of such types of teachers;
*Making B. Ed. (Yoga) / M.Ed.(Yoga) / M.A. (Education) Yoga courses introduced in all Departments of Education of Central Universities and in all Colleges of Teacher Education and Institutes of Advanced Study in Education, covered under central govt. scheme.
*Making District Institutes of Education and Training and Block Institutes of Teacher Education receiving financial assistance from the Central Government elevated to higher education stage and making appropriate changes in funding pattern of the Central Government.

IMPROVING QUALITY OF ASSESSMENT OF INSTITUTIONS AND UNIVERSITIES
*Giving freedom to institutions to get them assessed, by NAAC or not;
*Allowing States to have their own accreditation and assessment agencies and NAAC getting restricted to central government universities and institutions;
*Modifying accreditation system to have course and subject specific accreditation of colleges and universities;
*Making accreditation process take into consideration skills of teaching of faculty;
*Making follow up study of products of institutions part of the process of evaluation of programmes of the institutions;
*Making it mandatory for every college and every university department to have its annual performance reports.

IMPROVING HIGHER EDUCATION CURRICULA
* Ensuring flexibility in curricula including single subject Bachelor degree;
*Making it mandatory for national / state level statutory bodies for accreditation carry out, at intervals, comparative studies of syllabi for various courses offered by universities in India and also compare syllabi offered in Indian universities with universities in developed nations;
*Making provision for year round facilities for training in yoga and yoga practice in its institutions, as an optional activity;
*Making it mandatory for national / state level agencies involved in accreditation of various categories of education undertake development and dissemination of annotated bibliographies of printed publications and printed resources related to each topic in the curricular areas covered by them;
Making universities specify number of teaching days in an academic session and cancelling holidays, in case of loss of working days due to strike and natural calamity and in such cases, having appropriate increase in personal leave of the teachers and other employees or extending the length of the academic year.

CONCLUSION
Initially, structures of education varied from one state to another. Although four decades have passed since education subject was brought to concurrent list of the Constitution, there are variations among States. For instance, NCTE act is not applicable for Jammu and Kashmir state. Most of the higher secondary classes in Odisha state are part of junior colleges and the students are taught by junior lecturers, who need not have any teacher training qualification. Odisha state has an act that prohibits teacher training through private agencies and there is only one private teacher training

institution, which is run by a Christian group (minority group). Mizoram also does not have any private teacher training institution, Whereas private institutions dominate in other States. Certain states are forced to adopt undesirable strategies to cope with the requirements of the national level statutory bodies. These bodies also are forced to have differentiated approaches for private and government institutions. Nation, while formulating national policy, may need to have flexibility, noting existing variations among States and UTs, so that there may not be a situation, where States and UTs are forced to ignore the policy directives.

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SWAMI VIVEKANANDA 1863–1902

Swami Prabhananda

A regal, majestic figure of commanding presence, vast learning and deep insight, Swami Vivekananda as barely 30 years old when he created a stir at the World's Parliament of Religions in Chicago in 1893. hree and a half years later, when he returned to India, his homeland, it was as a colossus of strength, courage, confidence, love and manliness – the embodiment of the ideal of the 'man-making and character-building' education he propagated.

Swami Vivekananda was born Narendranath Datta on 12 January 1863 in Calcutta in a respectable middle-class family. His father, Viswanath Datta, was an attorney and was a lover of the arts and literature. Although liberal-minded, Viswanath was skeptical about religious practices. On the other hand, Narendra's mother, Bhubaneshwari Devi, was a pious, kind-hearted lady, devoted to the Hindu traditions. The influence of each of his parents on Narendra was different, yet together they provided a congenial atmosphere for the precocious boy to grow into an energetic young man with high ideals.

During his formative years he developed extraordinary mental abilities which some people either misunderstood or ignored, but which others appreciated and took as signs of an outstanding individual. As a child he liked to play at meditation and would easily become engrossed. Once when he was seated thus in meditation along with some of his friends, the sudden appearance of a cobra slithering across the floor drove all of the children out of the room except Narendra, who remained absorbed in meditation.

Narendra's power of concentration – of fixing his mind on one thing while detaching it from everything else – was remarkable. In his later life he once shot in succession twelve eggshells bobbing up and down on the water of a river, although he had never fired a gun before. No less striking was his self-control. He remained calm and unruffled, no matter how dramatic the situation he was in.

Ever since childhood, Narendra had had great admiration for wandering monks, and he liked to think that one day he himself would become a monk. But his ambition only became evident during his college days at the Scottish Church College. He began to search out scholars and spiritual leaders in order to question them. But none of them could satisfy him. It was from William Hastie, principal of his college, that he heard for the first time of Sri Ramakrishna, the saint of Dakshineswar. His meeting with Sri Ramakrishna in November 1881 proved to be a turning point in his life. About this meeting, Narendranath said:

He [Sri Ramakrishna] looked just like an ordinary man, with nothing remarkable about him. He used the most simple language and I thought 'Can this man be a great teacher?' – I crept near to him and asked him the question which I had been asking others all my life: 'Do you believe in God, Sir?' 'Yes,' he replied. 'Can you prove it, Sir?' 'Yes.' 'How?' 'Because I see Him just as I see you here, only in a much intenser sense.' That impressed me at once. [. . .] I began to go to that man, day after day, and I actually saw that religion could be given. One touch, one glance, can change a whole life (*CW*, vol. IV, p. 179).

Ramakrishna's life was one of spiritual experience and achievement. He also discovered some truths of great social significance. About the latter Ramakrishna said:

I have practised all religions – Hinduism, Islam, Christianity – and I have also followed the paths of the different Hindu sects. I have found that it is the same God toward whom all are directing their steps, though along different paths (*Gospel*, 35).

Sri Ramakrishna carefully guided Narendra and a band of other young dedicated disciples, and the Master chose Narendra as the leader of the group. After the Master's passing away, these young devotees gathered together in a dilapidated house in Baranagore, a northern suburb of Calcutta, which became the first centre of the Ramakrishna Order. With a total rejection of material possessions and an unshakeable
commitment to their Master and his teachings, they endured unbelievable privations and devoted themselves to spiritual practices.

Travelling throughout the length and breadth of India, mostly on foot, Narendra was trying to work out a purpose for his life. While on the road, he often faced starvation and frequently found himself with nowhere to stay. To Narendra, this was an opportunity to study India and its needs at first hand. He observed that his country possessed a priceless spiritual heritage, but had failed to reap the benefit of it. The weak points were poverty, caste, neglect of the masses, oppression of women and a faulty system of education. How was India to be regenerated? He came to the conclusion:

We have to give back to the nation its lost individuality and *raise the masses*. [. . .] Again, the force to raise them must come from inside (*CW*, vol. VI, p. 255).

Narendranath Datta had by this time been transformed into Swami Vivekananda, and he had found his life's mission. Taking a broad look at the early part of his life we can see that there were four influences that formed his personality and philosophy:

1. India was then under British rule and was experiencing an upheaval in its cultural life. British rule had brought India into the world community, and English education and modernization had brought new hope. Yet, reflecting on the actual result of all this, Vivekananda said, 'A few hundred, modernised, half-educated, and denationalised men are all that there is to show of modern English India – *nothing else*' (*CW*, vol. VIII, p. 476). In his youth, Narendra 'became fascinated with the Evolutionism of Herbert Spencer', and 'translated Spencer's book on "Education" into Bengali for Gurudas Chattopadhyaya, his publisher' (Datta, 1993, pp. 88, 286). It is also said that Narendra exchanged correspondence with Herbert Spencer for some time (Gambhirananda, 1996, vol. I, p. 74). But, alongside his study of Spencer and other Western philosophers, he also delved deep into Indian Sanskrit scriptures.
2. Sri Ramakrishna, the saint of Dakshineswar, had a profound influence on his contemporaries
who were considered the builders of modern India. He was practically illiterate and spoke in a rustic dialect, yet the spiritual depth and power of his teachings impressed intellectual giants such as Friederich Max Müller. In Swami Vivekananda's estimation, his Master fully harmonized the intellectual, emotional, ethical and spiritual elements of a human being and was the role model for the future.
3. Swami Vivekananda's family also provided a strong moral and cultural foundation to his life. Due in great part to his upbringing, his tastes were eclectic and his interests wide. In fact, the desire he had

acquired in his youth for knowledge prompted him later to gather as much as he could wherever he was – whether in India or in the West.
4. Equally important, if not more so, was the Swami's knowledge of India based on his first-hand experiences acquired during his wanderings throughout the country. His pilgrimages transformed him. He became a true lover of humanity and became endowed with the quality of *sarvabhutahite ratah* (being devoted to the welfare of all beings).[1]

At about the same time that Vivekananda completed his tour of India, he was asked to represent Hinduism at the World's Parliament of Religions, to be held that year (1893) in Chicago. Vivekananda also felt that this might give him an opportunity to do something for his country, so he agreed to go. When the Parliament of Religions convened in September 1893, Vivekananda created a sensation. While other delegates spoke of their own faiths and creeds, Vivekananda spoke of the God of all, the source and essence of every faith. His call for religious harmony and acceptance of all religions brought him great acclaim. When the Parliament was over, he went on a lecture tour in the Midwest and the East coast of the United States. People came in large numbers to hear him speak wherever he went, particularly intellectuals, thus fulfilling his Master's prediction that he would some day become a 'world teacher'.

Vivekananda's tour of the United States also had a revitalizing effect on India. Previously, those who had gone to the West from India were full of apologies for the state of their country. He was not. He always spoke about his country with pride and respect. Thus, his work in the West instilled self-respect and self-confidence in the Indian psyche and helped India in its search for identity. It also helped to overcome the stereotypes and deep-rooted prejudices about India in Westerners' minds.

After giving up his lecture tour, the Swami started giving free classes on Vedanta and Yoga in New York. This resulted in the founding of the Vedanta Society there. In the summer of 1895 he sailed for England at the invitation of E.T. Sturdy and Henrietta Müller. His lectures there were quite successful. In December 1895 Vivekananda returned to the United States, where he continued his classes in New York and also lectured in other cities, and then returned to Europe again in April 1896. In May 1896, the Swami met Max Müller and his wife at Oxford. At the end of December 1896, Vivekananda sailed to India from Europe.

When the news broke that Swami Vivekananda was returning to India, people all over the country prepared to give him a hero's welcome. The Swami arrived in South India in January 1897 accompanied by three of his Western disciples. Everywhere he went addresses of welcome were presented and multitudes gathered to see him. In Vivekananda's response to these addresses, he indicated that he had a plan in mind to help uplift the masses. In fact, as early as 24 December 1894, he had written in a letter, 'My whole ambition in life is to set in motion a machinery which will bring noble ideas to the door of everybody, and then let men and women settle their own fate' (*CW*, vol. V, p. 29).

On 1 May 1897, a few months after his return to Calcutta, the Swami set his plan in motion when he founded the Ramakrishna Mission. This was the beginning of an organized movement to help the suffering masses through educational, cultural, medical and relief work. Within a few weeks of the founding of the Ramakrishna Mission, one of Swami Vivekananda's brother disciples, Swami Akhandananda, was passing through Murshidabad in Bengal and was struck by the pitiful condition of the people there who were suffering from a famine. He immediately started relief work. Since then the Ramakrishna Mission has continued to come to the aid of those suffering from natural or man-made calamities.

It may not be out of place to mention that in a speech made in 1993, Federico Mayor, Director-General of UNESCO, stated:

I am indeed struck by the similarity of the constitution of the Ramakrishna Mission which Vivekananda established as early as 1897 with that of UNESCO drawn up in 1945. Both place the

human being at the centre of their efforts aimed at development. Both place tolerance at the top of the agenda for building peace and democracy. Both recognize the variety of human cultures and societies as an essential aspect of the common heritage.[2]

About two years after Vivekananda's return to India, the centre, which his brother disciples had managed while he was in the West, was transferred to a large piece of land at Belur, across the river from Calcutta. This became the headquarters of the Ramakrishna Mission. Vivekananda emphasized that the aim of the mission was 'man making', and he wanted it eventually to develop a university as part of its mission.

About this time the Swami received a letter requesting him to head the Research Institute of Science that Sir Jamshedji Tata had set up, but he declined the offer as it conflicted with his spiritual interests.[3]

In June 1899, he returned to Europe with one of his brother disciples and also Sister Nivedita, an Irish disciple. After a short stay in London, Vivekananda sailed for New York. A few months later he left for California where a series of lectures and classes led to the founding of the Vedanta Society in San Francisco. He eventually returned to New York, but in July 1900 went to Paris, where he stayed for three months. During this time he participated in the Congress of the History of Religions, held in connection with the Universal Exposition.

The Swami returned to Calcutta on 9 December 1900. For the most part he spent his last days at the Belur centre training his young followers and guiding the organization. He expected his followers to be exemplars of an ideal type of human being, and he inspired them by saying:

Tell me what you have done. Couldn't you give away one life for the sake of others? [. . .] Let this body go in the service of others – and then I shall know you have not come to me in vain! (Rolland, 1992, p. 166).

On 4 July 1902, he was more vigorous than he had been for a long time, and he busied himself with various activities. In the evening he meditated and left his body, as he himself had predicted, in a high yogic state. He was only 39 years old.

Education – what it means

Sister Nivedita used to say that those who knew Swami Vivekananda understood that he was one who had experienced in his own life all the truths about which he spoke. This is equally valid when he addressed the subject of education. To him education plays a vital role in curing the evils in society, and it is critical in shaping the future of humanity. Although Vivekananda did not write a book on education, he contributed valuable thoughts on the subject that are relevant and viable today. In order to understand his thoughts, we should first consider his oft-quoted definition of education – 'Education is the manifestation of the perfection already in man' (*CW*, vol. IV, p. 358).

Vivekananda's definition of education is one of remarkable insight. First of all, the word 'manifestation' implies that something already exists and is waiting to be expressed. The main focus in learning is to make the hidden ability of a learner manifest. As Vivekananda said, 'what a man "learns" is really what he "discovers", by taking the cover off his own soul, which is a mine of infinite knowledge' (*CW*, vol. I, p. 28). According to the Vedanta philosophy, knowledge is inherent in a human being, like a spark in a piece of flint, and all that is needed is the strike of suggestion to bring it out. 'Manifestation' indicates spontaneous growth, provided that the impediments, if any, are removed.

Next in importance in the Swami's definition of education is the expression 'already in man'. This refers to a human being's potential, which is the range of the abilities and talents, known or unknown, that he was born with. 'Potential' speaks of the possibility of awakening something that is lying dormant. Israel Scheffler, in his book *Of human potential*,[4] considered three aspects of this: (a) *the*

capacity to acquire a specific characteristic or to become someone who possesses it. For instance, we might say, 'Amal has the capacity to become a Maradona, the world-famous soccer player'; (b) *the propensity* – an attribute which indicates what a person is likely to do when the opportunity comes and freedom of choice is available. It suggests something about a person's motivation. For example, Rabindranath Tagore's propensity, expressed in his *Gitanjali*, indicates his strong aspiration to discover the wonder behind this creation; and (c) *the capability* – i.e. a person's motivation and efficiency in working towards an intended outcome. It refers to something more than a person's capacity to perform. Rather, it is a person's strength and capacity to get rid of obstacles to his learning – such as his lack of motivation or the obstacles in his environment.

Thus, these three concepts – capacity, propensity and capability – emphasize three aspects of education, respectively: (a) that which makes learning possible; (b) the development of learning; and (c) self-development or self-empowerment.

A child has many potentials of variable worth, and they may create mental conflict within him. Therefore, he has to learn to choose which he should try to develop, and which he should minimize, counter or ignore. Then again, as his chosen potentials start to unfold, they should be supervised in order to achieve their harmonious and purposeful development.

The word 'perfection' in the Swami's definition of education is also very significant. We can see that every act connected with learning, training, etc., is part of a process directed towards an end. The English word 'perfect' implies completion, or something being made whole. The Greek word *teleics* is translated as 'perfect', and suggests the idea of attaining a goal or an end. Drawing on these meanings, one may conclude that perfection in educational parlance is the goal of actualizing the highest human potential.

The goal of education – general or ultimate – is essentially laid down by society and therefore varies from society to society. Even as every society tries to keep pace with the contemporary world, societies with a stable and older tradition cherish some higher goals of everlasting value. Taking into consideration the vast experience of the Indian civilization, Vivekananda's use of the word 'perfection' needs to be viewed at two levels:

1. 'Perfection' in the metaphysical sense implies the realization of the soul's own ever perfect nature. The Vedanta philosophy says that a human being is not born a sinner, nor is he necessarily a victim of circumstances. The main cause of his suffering is his ignorance of his true nature. Explaining the implications of this, Vivekananda once said:

The Light Divine within is obscured in most people. It is like a lamp in a cask of iron, no gleam of light can shine through. Gradually, by purity and unselfishness, we can make the obscuring medium less and less dense, until at last it becomes transparent as glass (*CW*, vol. VII, p. 21).

2. At the empirical level the concept of 'perfection' has to address the various problems human beings encounter in society. As Vivekananda said:

The education which does not help the common mass of people to equip themselves for the struggle for life, which does not bring out strength of character, a spirit of philanthropy, and the courage of a lion – is it worth the name? Real education is that which enables one to stand on one's own legs (*CW*, vol. VII, pp. 147–148).

Education, he said, must provide 'life-building, man-making, character-making assimilation of ideas' (*CW*, vol. III, p. 302). The ideal of this type of education would be to produce an integrated person – one who has learned how to improve his intellect, purify his emotions, and stand firm on moral virtues and unselfishness.

There are two levels designated by the ancient Indian scriptures as *para vidya* (spiritual values) and *apara vidya* (secular values) respectively. This division is merely for practical convenience; otherwise *vidya*, or learning, is a continuum, leading one towards the ultimate goal which, according to Vivekananda, was complete freedom of the soul.

Vivekananda also observed that, if education is to serve the entire human being, in all his/her dimensions, the pursuit of knowledge will be a lifelong process. Even an illustrious being like Sri Ramakrishna said, from his own experience, 'As long as I live, so long do I learn.' At the empirical level, today's knowledge explosion can keep people engaged for their entire lives. Therefore, education must be considered a continuous and lifelong process.

So far, our discussion of Vivekananda's ideas on education has been a simplistic analysis centring round his definition of education. However, this fails to do justice to some of his ideas on related issues, such as the relationship between education and society, between education and the teacher, between the professed goals of education and the goals actually achieved, and so forth. It is apparent, therefore, that Vivekananda's deep concern for social justice has not been reflected so far in our definition.

To this end, we can probe further into the expressions 'manifestation' and 'already in man', bearing in mind the situation in India in those days. In explaining the term 'manifestation', the Swami quoted part of one of the yoga aphorisms of Patanjali (author of an ancient Indian scripture – 4.3) – *Tatah kshetrikavat* [Therefore the obstructions] – that is to say, just as a farmer breaks the barriers to a course of water, which thereafter flows by its own force to irrigate his fields, so also a person's inherent power will spontaneously manifest itself when external and internal obstacles, if any, are removed at the proper time by the teachers or the education system. Such obstacles are of various kinds. External obstacles might be in the form of unfair distribution of educational resources and opportunities, inequalities in economic development and socio-political instability; whereas internal obstacles might have to do with the dynamics of the education system, such as the teacher/student relationship, the student's capacity to make personal judgements or to adapt to changes, and the student's mental or physical capacities.

In order to tackle these obstacles, the education system should take on two responsibilities: (i) it should help a person build a healthy and dynamic frame of mind to enable him to meet the challenges of life; and (ii) it should try to prevent, through proper training of its present students, any future evils in people and society which are likely to further complicate the problems of human beings. At the same time, however, the teachers and the designers of education systems must always keep in mind the Vedantic idea that whatsoever good or bad impressions a mind carries, a human being is essentially pure and divine, and a repository of immense possibilities.

In Vivekananda's view, educational concerns related to a person's interaction with society should receive due attention. The purpose of society is to help secure the well-being of human beings. In reality, however, human beings frequently find themselves entrapped in a society that threatens their freedom, a freedom essential for their educational growth. An ideal society, according to Vivekananda, should provide the resources as well as the opportunity for each of its members to develop his or her potential to the maximum. Education must embrace the whole society, with special attention to those who are most in need of it and who, for one reason or another, are unable to avail themselves of the existing facilities.

Training the mind

Vivekananda concurred with contemporary thinkers when he asserted that the mind – the chief instrument of learning – deserves more attention than it had earlier received. Training the mind should be a student's highest priority, and not simply the accumulation, the memorizing and the repeating of facts. In the long run, stuffing one's mind with information, technical skills and useless trivia only

creates more problems if one's mind is not nourished and strengthened and made healthy. Yet training of the mind in all its aspects is conspicuously absent in today's education.

Learning to concentrate the mind was the focus in the Swami's scheme. He said: 'To me the very essence of education is concentration of mind, not the collecting of facts' (*CW*, vol. VI, p. 38). In doing anything – such as thinking, working with the hands, etc. – the better the power of concentration the better the outcome will be. And this power of keeping the mind on the task can be improved. Training the mind to concentrate on a specific subject has several stages, the primary one being learning how to collect the mind and preventing it from running hither and thither. The student trains his mind to be more attentive and more 'mindful'.

Next, the student must learn how to detach his mind from distractions that impose themselves in spite of himself. Then, simultaneously, he must direct the mind on to the desired subject and focus the full force of his mind on it. To give an example: a convex lens gathers sunlight and focuses it on one point to burn a piece of paper. Likewise, when a mind becomes concentrated, it acquires tremendous power and is able to unlock the mysteries of the subject it is focused upon.

Similarly, the Swami also wanted students to cultivate will-power. According to him, will-power is developed when 'the current and expression of will are brought under control and become fruitful' (*CW*, vol. IV, p. 490). Will-power is necessary not only to conduct the learning process, but also to strengthen one's character.

Culture and education – the teacher and the pupil

Every society has its outer aspect called 'civilization', and also its inner aspect called 'culture'. In both of these a child is moulded and educated so that the beliefs and practices of his forefathers are carried on and not forgotten. Nevertheless, as Vivekananda says:

It is culture that withstands shocks, not a simple mass of knowledge. [. . .] Knowledge is only skin-deep, as civilisation is, and a little scratch brings out the old savage (*CW*, vol. III, p. 291).

A society is forever adding to its learning and culture. To the brilliant mind of T.S. Eliot, education was but a manifestation of culture. He said, 'The purpose of education, it seems, is to transmit culture: so culture is likely to be limited to what can be transmitted by education.' [5]

Similarly, Vivekananda observed that, through education, a child learns a culture and his behaviour is moulded accordingly, and he is thus guided towards his eventual role in society. In this process, several agents – such as his parents, peers and teachers – assist him. But nowadays, as formal education has become more and more institutionalized, teachers are expected to play a more significant role. A teacher needs to help a student learn how to think, what to think, how to discriminate and how to appreciate things. This is not just a matter of intellectual manipulation. This kind of teaching requires moral conviction and the courage to continuously pursue one's own course at all costs. The teacher must not only possess the knowledge he is to transmit to the student, but he must also know how to transmit it. And, in addition to the content of the teaching, what the teacher gives or transfers, to be truly effective, must possess some other elements. For instance, the teacher should share with the student the conviction that they are both truly one in Spirit – at the same time cultivating in the student a feeling of dignity and self-respect. [6] As Vivekananda said:

The only true teacher is he who can immediately come down to the level of the student, and transfer his soul to the student's soul and see through the student's eyes and hear through his ears and understand through his mind. Such a teacher can really teach and none else (*CW*, vol. IV, p. 183).

In a favourable ambience such as this 'the process of uncovering' the veil of ignorance works smoothly (*CW*, vol. I, p. 28).

On the student's side, in order to facilitate the manifestation of his innate strength and knowledge, he should cultivate the spirit of *shraddha* – that is, faith in himself, humility, submission and veneration for the teacher. This is also necessary to create a favourable environment for learning. The *Taittiriya Upanishad* (an ancient Indian scripture – 1.11.2) gives the instruction: '*Acharyadevo bhava* – Let the teacher be your *deva*' [i.e. a person fit to be worshipped or highly honoured]. The teacher/pupil relationship, based on respect and mutual trust, is the cornerstone of the edifice of Vivekananda's scheme of education. The Upanishads also advocated this. Before starting the lesson, the teacher and the pupils were to pray together so that they would mutually benefit and be strengthened by the teaching/learning process.

Character education and universal values

Vivekananda's guru, Sri Ramakrishna, used to say that *manush* needs to become *man-hush* – that is, a man needs to become a true man. 'He alone is a man,' he said, 'whose spiritual consciousness has been awakened' (*Gospel*, 851). Following his Master, Vivekananda emphasized that 'the ideal of all education, all training, should be this man-making'. Lamenting over the prevailing system of education, he said:

But, instead of that, we are always trying to polish up the outside. What use in polishing up the outside when there is no inside? The end and aim of all training is to make the man grow (*CW*, vol. II, p. 15).

In order to rectify the defects in the existing system, man's limited view of himself, on which the existing system of education is based, needs to be reconsidered. A human being is not simply a composite of body and mind. He is something more. According to the Vedanta philosophy, a human being has five sheaths, or coverings: the physical sheath, the vital sheath, the mental sheath, the intellectual sheath, and the blissful sheath. Today's education can at best touch the first four sheaths, but not the last one. Secular knowledge, skills and moral values may take care of the first four sheaths, but spiritual knowledge is essential for the fifth. Moreover, it should be noted that the fifth sheath is the reservoir of bliss, knowledge and strength, and all the other sheaths are activated by the fifth.

There is no doubt that today's education neglects training of the mind in all its aspects, but it also neglects the spiritual side of human beings. People's minds are not directed to higher pursuits of life with the result that their hidden potentials are not revealed. Only when wisdom, peace, strength, unselfishness, loving concern for others and other virtues become evident is a person transformed from a sensuous being to a true human being.

A tremendous explosion of knowledge without commensurate wisdom, plus immense power not tempered with discrimination, have made education today a potential source of danger. This is a serious problem looming large on humanity's horizon. As Vivekananda observed:

Intellect has been cultured with the result that hundreds of sciences have been discovered, and their effect has been that the few have made slaves of the many – that is all the good that has been done. Artificial wants have been created; and every poor man, whether he has money or not, desires to have those wants satisfied, and when he cannot, he struggles, and dies in the struggle (*CW*, vol. I, p. 414).

In order to counterbalance this uneven development, Vivekananda strongly recommended the adoption of a 'spiritual and ethical culture', and he looked upon 'religion as the innermost core of education' (*CW*, vol. III, p. 182; vol. V, p. 231). But by 'religion' he did not mean any particular religion. Religion to him meant the true eternal principles that inspire every religion. This is what touches the heart and has the potential to effect desirable changes in one's motivation. It also gives mental strength and broadness of outlook. Discussing the practical implications of morality, Swami Vivekananda once observed: 'What is meant by morality? Making the subject strong by attuning it to the Absolute, so that finite nature ceases to have control over us' (*CW*, vol. II, p. 137).

Thus, in order to be worthwhile and effective, education must be rooted in religion – or, to be precise, in the science of spirituality, and evidently not in dogma.

Character-building was fundamental in Vivekananda's educational scheme, as against career-orientation, which occupies centre-stage in today's education. A person is what his thoughts have made him. Explaining this, the Swami said, 'Each thought is a little hammer blow on the lump of iron which our bodies are, manufacturing out of it what we want it to be' (*CW*, vol. VII, p. 20). That is why one finds that the focus of the Swami's educational thoughts was on assimilation of man-making, character building ideas.

Everything a person does, every thought, every move, leaves an impression on the mind. Even when it is not outwardly apparent, it is strong enough to work beneath the surface. A person's character is determined by the sum total of these impressions. When a large number of these impressions come together, they form a habit. This then becomes a powerful force, for character is but repeated habits. This is why, through the acquisition and repetition of desirable habits, one's character can be remodeled.

The people one associates with, good or bad, contribute much to the development of one's character. In fact, their impact is greater than that of didactic teaching. That is why Swami Vivekananda said: 'Words, even thoughts, contribute only one-third of the influence in making an impression, the man, two-thirds' (*CW*, vol. II, p. 14). He therefore desired that the teacher's life and personality should be like a blazing fire which could have a positive influence on the pupils in his care. Exposure to exemplary role models, particularly when they are teachers, and also to wholesome curriculum materials that impart culturally-approved values to the young, are critical to character education.

Character-building education might focus on teaching what is right and wrong. But simultaneously, or alternatively, it should teach how to decide what is right and wrong. It has been rightly argued that participation in discussions of morality is more instructive than simply hearing about it. In any case, however, the teachers should be moral exemplars if the classroom and the school are to serve as arenas for the teaching of ethics. The students then have the experience of being part of a group of people who take moral values seriously, and this helps them imbibe moral values spontaneously.

The present education system has overemphasized the cultivation of the intellect at the cost of the general well-being of humanity. To check this dangerous trend, Vivekananda strongly recommended all-round development of human beings. In one of his lectures he expressed the desire 'that all men were so constituted that in their minds *all* these elements of philosophy, mysticism, emotion, and of work were equally present in full! That is the ideal, my ideal of a perfect man' (*CW*, vol. II, p. 388).

And the Swami expected that the education systems would be suitably designed to produce such wholesome human beings. Interestingly, the UNESCO report *Learning to be* published in 1972, while defining the aim of education, echoed this same idea. It reads: 'The physical, the intellectual, emotional and ethical integration of the individual into a complete man is a broad definition of the fundamental aim of education.' [7]

The education system and the poor

So far we have discussed education primarily in the context of the society that already benefits from education. Vivekananda, however, was a genuine friend of the poor and the weak, particularly the helpless masses of India, and he was the first Indian leader who sought a solution to their problems through education. He argued that a nation was advanced to the extent that education and culture reached the masses. Unless there was uniform circulation of national blood all over the body, the nation could not rise. He insisted that it was the duty of the upper classes, who had received their education at the expense of the poor, to come forward and uplift the poor through education and other means. In fact, the Swami's mission was for the poor. He once said, 'there must be equal chance for all – or if greater for some and for some less – the weaker should be given more chance than the strong' (*Letters*, 255).

The trend in recent years has been to shift the responsibility for education from the family, religious institutions, private charities and so forth, to public authorities,
particularly the State. Yet, in spite of this shift to the State, education has hardly reached the most underprivileged. As they are often victims of malnutrition, poor hygienic conditions and overcrowded housing, they can hardly take advantage of any half-hearted opportunity that is offered.

Vivekananda felt that alienation of any kind from the masses of society, who are mostly poor – whether it be alienation through learning, through wealth or through force of arms – weakens the leadership of a country. Therefore, for a sustainable regeneration of India, if not for anything else, top priority must be given to educating the masses and restoring to them their lost individuality. They should not only be given education to make them self-reliant, but also ideas, moral training and an understanding of their own historical situation so that they can work out their own salvation. Furthermore, they must be given culture, without which there can be no hope for their long-term progress.

The Swami was particularly worried about the degradation of women in India. He was emphatic that women must be educated, for he believed that it is the women who mould the next generation, and hence, the destiny of the country. In Vivekananda's educational scheme for India, the uplift of women and the masses received the highest priority, and his ideas approximated to Paulo Freire's concept of 'Conscientization'.[8]

Conclusion

There have been many changes in the field of education since Swami Vivekananda passed away one hundred years ago, but not as many changes as in other areas of society. One such noticeable change in education is that it is now engaged in preparing human beings for a new type of society, and it is trying to create a new type of human being for it. Interestingly, Swami Vivekananda had envisioned a society with a new type of human being in whom knowledge, action, work and concentration were harmoniously blended, and he proposed a new type of education for achieving this.

The right to education for everyone, guaranteed by the Constitution of India, was Vivekananda's dream, but it is still a far cry from its goal. His idea of continual, or lifelong, education, however, has been adopted in many countries already. Moreover, because of the adoption of continuous education in these countries, our idea of what constitutes success and failure has altered, raising new hope for the weak, underprivileged section of these societies – the very people who for various reasons cannot complete their education when they are young. Vivekananda's cry for the uplift of the downtrodden masses, particularly of the long-neglected women, has evoked a favourable response from different quarters, but societies tailor education to meet their own needs, thereby often robbing the weak of their freedom to determine their own destiny. Unless radical changes are made in all societies the poor will never be able to raise themselves. This was a major concern of the Swami. It is remarkable the extent to which there are similarities between Vivekanada's thoughts and actions taking place one century ago and the present concerns of UNESCO.

- His commitment towards universal values and tolerance, his active identification with humanity as a whole.
- The struggle in favour of the poor and destitute, to reduce poverty and to eliminate discrimination against women – reaching the unreached.
- His vision of education, science and culture as the essential instruments of human development.
- That education should be a lifelong process.
- And the need to move away from rote learning.

Himself a visionary and an original thinker, Vivekananda pointed out in his first public lecture in Asia, on 15 January 1897: 'But education has yet to be in the world, and civilisation – civilisation has begun nowhere yet' (*CW*, vol. III, p. 114). This is true. If we consider civilization to be the manifestation of the divine in human beings, as Vivekananda conceived it to be, no society has made much progress so far. This is why we find that mildness, gentleness, forbearance, tolerance, sympathy

and so forth – the signs of a healthy civilization – have not taken root in any society on an appreciable scale, although we prematurely boast of a global village. The lack of basic necessities among the underprivileged all over the world is no less striking than the lack of morality among the educated privileged ones. To squarely meet this great challenge, Vivekananda prescribed 'man-making and character-building education'.[9] For this reason, if not for anything else, Vivekananda's thoughts on education ought to be seriously re-examined today.

Notes

1. *Srimad Bhagavad Gita* 5.25. An ancient Indian scripture.
2. Speech by Federico Mayor, Director-General of UNESCO, on the occasion of the Exhibition and Seminar in Commemoration of the Centenary of Swami Vivekananda's Appearance at the Parliament of Religions, Chicago, 1893, given at UNESCO Headquarters, 8 October 1993.
3. Vivekananda had inspired Sir Jamshedji Tata to set up this educational scheme when they had travelled together from Yokohama to Chicago on the Swami's first visit to the West.
4. Israel Scheffler, *Of human potential*, Boston: Routledge & Kegan Paul, 1985.
5. G.H. Bantock, *T.S. Eliot and education*. London: Faber & Faber, 1970, p. 86.
6. *Srimad Bhagavatam*, 3.29.27.
7. Edgar Faure et al., *Learning to be*, Paris: UNESCO, 1972, p. 156.
8. Paulo Freire (1921–1997) of Brazil, one of the best known educators of our time, developed a teaching system based on an educational process that focuses on the learner's environment. According to Freire, the learner must be aware of the historical situation in which he is situated, and he must understand how the knowledge he acquires relates to himself and to the society he lives in. Freire lay emphasis on building critical awareness to enable a person to read and write not words, but true reality – i.e. to understand true reality. Critical awareness building does not stop at reflection but includes action on that reflection. Vivekananda also believed that a person is the maker of his own destiny and proper education can help him achieve this.
9. In this connection we can cite the views of some historians. Will and Ariel Durant, in their *The lessons of history*, said, 'Evolution in men during recorded time has been social rather than biological: it has proceeded not by heritable variations in the species, but mostly by economic, political, intellectual and moral innovation transmitted to individuals and generations by imitation, custom or education' (Will Durant and Ariel Durant, *The lessons of history*, New York: Simon & Schuster, 1968, p. 34).

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SRI AUROBINDO (1872–1950)

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An explorer and adventurer in consciousness (Das, 1977, 1999; Joshi 1998*a*), a visionary of evolution (Satprem, 1984), Sri Aurobindo(1972*a*, p. 49), had disclosed 'No one can write about my life because it has not been on the surface for man to see' finds echo in Rabindranath Tagore (see Raina, 1997), the fellow Bengali poet-artist and a Nobel laureate with whom Aurobindo felt a deep mutuality, who too had warned that one should not look for the poet in his biography. In fact, McDermott (1972) felt that 'interpreting the life of a great spiritual personality is always a treacherous enterprise, and the life of Sri Aurobindo is peculiarly inscrutable' (p. 15).

Born in Calcutta, then the capital of British India on 15 August 1872, Aurobindo Ackroyd Ghose—the Western middle name was given to by his father at birth—was the third son of his parents—Dr. Krishnadhan Ghose and Swarnalata Devi. The honorific 'Sri' was traditionally used as a mark of respect or worship forming an integral part of his name. In Sanskrit, the word Aurobindo means lotus. Aurobindo's father chose this name for him, thinking that it was unique, but he little suspected that, in the language of occultism, the lotus is the symbol of divine consciousness.

Aurobindo received his early education in a convent school intended for European children and in 1879 was taken by his father to England for schooling in Manchester and later at St. Paul's School, London. A scholarship from St. Paul's enabled Aurobindo to go to King's College, Cambridge, in 1889. He practically won all the prizes in Greek and Latin. He passed the first part of the classical Tripos in the first class in 1892. The same year he successfully passed his Indian Civil Service Examination. But he did not report for the riding test and thereby was disqualified for the civil service.

Sri Aurobindo, who had started writing at an early age, even during his study at Manchester (1879–84), had continued with his creativity through all the turbulent phases of his life, even during his incarcertation. His first book, a collection of poems, entitled *Songs to Myrtilla,* was published in 1895. Between that and the last work to be published during his lifetime, *Savitri* (1950), he had written extensively on Yoga, culture, sociology, in addition to his poetry and plays—contributions of far-reaching and multi-faceted importance to human thought and in action. He has given a new cosmology and a new metaphysics in his *Life divine* 'considered as the philosophical masterpiece of the century' (Vrekhem 1999, p. 44) which has revolutionized our very conception of psychology and gave it a new basis in *Life divine* and in his letters. He formulated a profoundly new approach to sociology in his *The human cycle* and showed through a searching analysis of past and current systems of social and political thought how a truly spiritual attitude is essential as a foundation of a new and lasting social order. He extended the application of this very approach to the sphere of international politics in his *The ideal of human unity*. In his writings on education, he formulated a theory that could, with some variations, be adapted to all the nations of the world, fostering the growth of the integral consciousness in every pupil and bringing back to legitimate authority of the Sprit over a matter fully developed and utilised. He showed in his *The synthesis of Yoga* how all the systems of Yoga combine and converge on the path to Supermind. In his *The secret of the Vedas, The essays on the Gita* and writings on Upanishads, he opened up new and epoch-making ways of studying the ancient Indian texts throwing new light on philosophy and reducing both anthropology and anthropomorphology to their proper place in a balanced scheme of knowledge. He offered an illuminating interpretation of Indian culture down the centuries in his *The foundations of Indian culture*. Sri Aurobindo's elaborated epic, *Savitri* reveals the consummation of the many poetic styles that he attempted in all his works. Written in nearly 24,000 lines in blank verse, Sri Aurobindo's *Savitri* has been estimated to be the largest poem in the English language. In *The future poetry,* Sri

Aurobindo worked out a literary theory (Heehs, 1989, 1998) considered as an original contribution to aesthetics in its concept of poetry (Gokak, 1973). All this and his translations, letters and minor works were compiled and published in a systematic manner after his passing away on the 5 December 1950. A new edition of them, in thirty volumes, was brought out on the occasion of the centenary of his birth in 1972. The Swedish Academy considered him for the nomination for the Nobel Prize of 1950, the last year of Sri Aurobindo's life (Heehs, 1989).

There are many ways of approaching Sri Aurobindo, but the light that one can gain from him, as Joshi (1998*b*) noted, will depend upon the height and breadth of one's own quest. It is in raising most comprehensive questions in their profundity relating to the world and its future possibilities and the role that we are required to play as also how we should prepare ourselves to fulfil that role that we shall find the real relevance of Sri Aurobindo and find ourselves truly equipped to study him and the supra-mental consciousness that he has discovered and brought down on the earth.

Three fundamental problems which gave direction to the spiritual quest and philosophical thinking and helped to fashion Sri Aurobindo's major theories, relate to the paradox of the national life of India, the supposed conflict between spirituality and action, and the evolution of man. The search for solutions to these problems relates to the unique and creative tension in his own experience between spirituality and politics, both during his years of political activity and during his four decades of *sadhana* (spiritual discipline) at Pondicherry (Chaudhuri, 1972; McDermott, 1972). Aurobindo's writings provide the needed force for action, realization and transformation which is reflected in his philosophy arrived at through inner experience. He wrote (in Heehs, 1989, p. 110) 'in fact I was never satisfied till experience came and it was on this experience that later on I founded my philosophy'. His integral philosophy (see Sorokin, 1960) grew out of his Yoga—not the other way round.

Two phrases that surge out of Sri Aurobindo's writings that sum up his message are: 'Integral perfection' and 'Spiritual religion of humanity'. His call for integrality and synthesis is most distinctively reflected in his statements: 'We of the coming day stand at the head of a new age of development which must lead to such a new and larger synthesis. [...] We do not belong to the past dawns, but to the noons of the future' (in Joshi, 1998*b*, p .3). To attain integral perfection, Sri Aurobindo has found education to be critical.

Integral education for the growth of the soul

Originally a poet and a politician, not a philosopher, Sri Aurobindo engaged himself for forty-five years out of his seventy-eight years in the practice of Yoga, and developed a philosophy of complete affirmation, affirming the reality of the world from the ultimate standpoint and the meaningfulness of socio-political action from the spiritual standpoint (Chaudhuri, 1972). He was sovereignly aware of the significance of variations in the concept of man, his life and destiny, of the nation and of humanity and the life of human race, which get reflected in the respective philosophies of education, and developed his scheme of integral education rooted in 'the developing soul of India, to her future need, to the greatness of her coming self creation, to her eternal spirit' (Sri Aurobindo in Sen, 1952, p. 3). India, according to Sri Aurobindo (1990, p. 15), has seen always in man the individual a soul, a portion of the Divinity enwrapped in mind and body, a conscious manifestation in Nature of the universal self and spirit. In his educational philosophy, Sri Aurobindo (Ibid, p. 9) upheld the basic but commonly forgotten principle that 'it is the spirit, the living and vital issue that we have to do with, and there the question is not between modernism and antiquity, but between an imported civilisation and the greater possibilities of the Indian mind and nature,not between the present and the past, but between the present and the future'. In devising a true and living education, three things according to Sri Aurobindo—the man, the individual in his commonness and his uniqueness, the nation or people and universal humanity—should be taken into account.

Accordingly, Aurobindo conceived of education as an instrument for the real working of the spirit in the mind and body of the individual and the nation. He thought of education that for the individual will make its one central object the growth of the soul and its powers and possibilities, for the nation will keep first in view the preservation, strengthening and enrichment of the nation—soul and its

Dharma (virtue) and raise both into powers of the life and ascending mind and soul of humanity. And at no time will it lose sight of man's highest object, the awakening and development of his spiritual being (Ibid, p. 16). A concept underlying the true and living integral education.

Integrality of education is conceived as a process of organic growth, and the way in which various faculties could be developed and integrated is dependent upon each child's inclination, rhythm of progression and law of development, S*wabhava* (inherent disposition) and S*wadharma (*inner nature*)*. Integral education is not conceived as a juxtaposition of a number of subjects and even juxtaposition of varieties of faculties. The idea is to provide facilities for varieties of faculties, varieties of subjects and various combinations of pursuits of Knowledge, Power, Harmony and Skill in works. These faculties are so provided that they could be made use of by each student and the teacher so that a natural process of harmonious development could be encouraged.

***Antahkarna* (mind): the instrument of the educationist**

According to Sri Aurobindo, mind or *antahkarana* which consists of four layers is the instrument of the educationist. 'The reservoir of past mental impressions, the *citta* or storehouse of memory, which must be distinguished from the specific act of memory, is the foundation on which all the other layers stand. The passive memory or citta needs no training, it is automatic and naturally sufficient to its task; there is not the slightest object of knowledge coming within its field which is not secured, placed and faultlessly preserved in that admirable receptacle. It is the active memory, a higher but less perfectly developed function, which is in need of improvement'.

Manas or mind proper, the sixth sense of Indian psychology, is the second layer. Its function is to receive the images of things translated into sight, sound, smell, taste and touch, the five senses and translate these again into thought—sensations. Therefore right use of the six senses is vital to see that they are not stunted or injured by disuse, but trained by the child himself under the teacher's direction to that perfect accuracy and keen subtle sensitiveness of which they are capable. In addition, whatever assistance can be gained by the organs of action, should be thoroughly employed. The hand, for instance, should be trained to reproduce what the eye sees and the mind senses. The speech should be trained to a perfect expression of the knowledge which the whole *antahkarna* possesses.

The real instrument of thought which forms the third layer is the intellect or *buddhi*. It orders and disposes of the knowledge acquired by the other parts of the machine. Infinitely the most important of the three thus far named for education, Sri Aurobindo considers intellect as an organ composed of several groups of functions, divisible into two important classes, the functions and faculties of the right hand, the functions and faculties of the left hand (for its implications in the context of hemispheric specialization and education see Raina, 1979).

'The faculties of the right-hand are comprehensive, creative and synthetic; the faculties of the left-hand critical and analytic. To the right-hand belong judgement, imagination, memory, observation; to the left-hand comparison and reasoning. The critical faculties distinguish, compare, classify, generalise, deduce, infer, conclude; they are the component parts of the logical reason. The right-hand faculties comprehend, command, judge in their own right, grasp, hold and manipulate. The right-hand mind is the master of the knowledge, the left-hand its servant. The left-hand touches only the body of knowledge, the right-hand penetrates its soul. The left-hand limits itself to ascertained truth, the right-hand grasps that which is still elusive or unascertained. Both are essential to the completeness of the human reason. These important functions of the machine have all to be raised to their highest and finest working-power, if the education of the child is not to be imperfect and one sided' (Aurobindo, 1990. P. 24).

Sri Aurobindo adds that there is another layer of faculty which, not as yet entirely developed in man, is attaining gradually to a wider development and more perfect evolution. 'The powers peculiar to this highest stratum of knowledge are chiefly known to us from the phenomena of genius, -- sovereign discernment, intuitive perception of truth, plenary inspiration of speech, direct vision of knowledge to an extent often amounting to revelation, making a man a prophet of truth. These powers

are rare in their higher development, though many possess them imperfectly or by flashes. They are still greatly distrusted by the critical reason of mankind because of the admixture of error, caprice and a biased imagination which obstructs and distorts their perfect workings. Yet it is clear that humanity could not have advanced to its present stage if it had not been for the help of these faculties, and it is a question with which educationists have not yet grappled, what is to be done with this mighty and baffling element, the element of genius in the pupil. The mere instructor does his best to discourage and stifle genius, the more liberal teacher welcomes it' (Ibid, p. 25).

The significance of physical and moral education

Seeking to effect a synthesis of the values of the East and the West in the contemporary philosophy of education, Sri Aurobindo insisted that a healthy body is a necessary condition for intellectual or spiritual attainment. For him physical education means not only the proper functioning of the various organs of the body but also the development of strength, balance, and a sense of beauty. According to him, beauty is the ideal which physical life has to realise.

' If our seeking is for a total perfection of the being', says Aurobindo, 'the physical part of it cannot be left aside; for the body is the material basis, the body is the instrument which we have to use. [...] The perfection of the body, as great a perfection as we can bring about by means at our disposal' must be the ultimate aim of physical culture'. Therefore, 'a development of the physical consciousness must always be a considerable part of our aim, but for that the right development of the body itself is an essential element; health, strength, fitness are the first needs, but the physical frame itself must be the best possible' (Ibid , p. 68- 69).

The education of the intellect, says Aurobindo, divorced from the perfection of the moral and emotional nature, is injurious to human progress. He admits the difficulties involved in providing a suitable moral training for the school and college. He distinguishes the heart from the mind, and says, that to instruct the mind is not to instruct the heart. He senses the danger of moral textbooks being used for the purpose, in that they make the thinking of high things mechanical and artificial, and whatever is mechanical and artificial is inoperative for good. Further, he points out pertinently that `the attempt to make boys moral and religious by the teaching of moral and religious text-books is a vanity and a delusion, precisely because the heart is not the mind and to instruct the mind does not necessarily improve the heart (Ibid. p. 27).

The best kind of moral training for a man, that Sri Aurobindo conceives of is, 'to habituate himself to the right emotions, the noblest associations, the best mental, emotional and physical habits and the following out in right action of the fundamental impulses of his essential nature' (Ibid, p. 27). By way of moral and religious education, any attempt at imposition of a certain discipline on children, dressing them into a certain mould, lashing them into a desired path is essentially hypocritical and heartless. Only what the man admires and accepts, becomes part of himself; the rest is a mask. On the other hand, to neglect moral and religious education is to corrupt the race. In moral training, Sri Aurobindo stresses the value of suggestion and deprecates imposition. 'The first rule of moral training', he says, 'is to suggest and invite, not command or impose. The best method of suggestion is by personal example daily converse and the books read from day to day' (p.29).

'Every boy should', says Aurobindo, 'therefore be given practical opportunity as well as intellectual encouragement to develop all that is best in the nature. If he has bad qualities, bad habits, bad *samaskaras (*behaviour patterns*),* whether of mind or body, he should not be treated harshly as a delinquent, but encouraged to get rid of them by the *Rajayogic* (a type of yoga) method of *samyama* (self-control), rejection and substitution' (Ibid, p. 30). Instead of discouraging such people, Aurobindo would like them to be rather encouraged to think such bad traits, 'not as sins or offences, but as symptoms of a curable disease, alterable by a steadyand sustained effort of the will—falsehood being rejected […] and replaced by truth, fear by courage, selfishness by sacrifice and renunciation, malice by love' (p. 30). Unformed virtues may not be rejected as faults.

No religious teaching, according to Aurobindo is of any value ‘unless it is lived, and the use of various kinds of *sadhana*, (spiritual self-training and exercise) is the only effective preparation for religious living. The ritual of prayer, homage, ceremony is carved for by many minds as an essential preparation and, if not made an end itself, is a great help to spiritual progress; if it is withheld, some other forms of meditation, devotion or religious duty must be put in its place. Otherwise, religious teaching is of little use and would almost be better ungiven’ (p. 31).

The principles of teaching and the training of the senses

In a series of articles that Sri Aurobindo wrote in 1909–10, he enunciated three fundamental principles of teaching. ‘The first principle of true teaching is that nothing can be taught. The teacher is not an instructor or task master; he is a helper and a guide. His business is to suggest and not to impose’. The second principle according to Sri Aurobindo, is that ‘the mind has to be consulted in its growth’. He pointed out that the idea of hammering the child into the shape desired by the parents or teacher is a barbarous and ignorant superstition. He warned that to force the nature to abandon its own *dharma* is to do it permanent harm, mutilate its growth and deform its perfection, and that there can be no greater error than for the parents or the teachers to arrange beforehand that the given student shall develop particular qualities, capacities, ideas, virtues or be prepared for a pre-arranged career. And the third principle of education that Sri Aurobindo laid down is to work from near to the far, from that which is to that which shall be. In other words, Sri Aurobindo underlined that education must proceed from direct experience and that even that which is abstract and remote from experience should be brought to the ken of experience. Knowledge has to be a growth from personal experience to larger and intenser and higher experience.

There are several other guidelines that we find in Sri Aurobindo. While explaining the instruments of the work of the teacher, he writes ‘Teaching, example, influence—these are the three instruments of the *guru* (teacher or guide). But the wise teacher will not seek to impose himself or his opinions on the passive acceptance of the receptive mind; he will throw in only what is productive and sure as a seed that will grow under the divine fostering within. He will seek to awaken much more than to instruct; he will aim at the growth of faculties and the experiences by a natural process and free expansion. He will give a method as an aid, as a utilisable device, not as an imperative formula or a fixed routine. And he will be on his guard against any turning of the means into a limitation, against the mechanising of process’ (Sri Aurobindo, 1972b, p. 60).

‘What is his method and his system?’ asks Sri Aurobindo and answers, ‘He has no method and every method. His system is a natural organization of the highest processes and movements of which the nature is capable. Applying themselves even to the pettiest details and to actions the most insignificant in their appearance with as much care and thoroughness as to the greatest, they in the end lift all into the Light and transform all’. (Ibid, p. 55).

‘This imperfect nature of ours,’ ‘explains Sri Aurobindo, ‘contains the materials of our perfection, but inchoate, distorted, mis-placed, thrown together in disorder or a poor imperfect order. All this material has to be patiently perfected, purified, reorganised, new—moulded and transformed, not hacked and hewn and slain or mutilated, not obliterated by simple coercion and denial’ (Ibid, p. 233).

These principles, it will be observed, are subtle and complex, and no rigid formula of practice can be derived from them. They impose a great responsibility on the teacher and demand from him extraordinary qualities of a profound psychologist (Joshi, 1975).

In the matter of the training of the senses, Aurobindo aims at nothing less than perfection. This, he says, must be one of the first cares of the teacher. The two important things that are needed of the senses, he points out are "accuracy and sensitiveness". The senses depend for their accuracy and sensitiveness on the unobstructed activity of the nerves which are the channels of their information and the passive acceptance of the mind, the recipient. In case of any obstruction, the remedy lies in the purification of the nerve system.‘This process inevitably restores the perfect and unobstructed activity

of the channels and, ifwell and thoroughly done, leads to a high activity of the senses. The process is called in yogic discipline *nadi-suddhi* or nerve – purification'. (Aurobindo, 1990, p. 37).

Six senses which minister to knowledge, sight, learning, smell, touch and taste, mind or *manas* (the sixth sense of the Indian psychology) can be developed through the physical nerves and their end—organs, but *manas* could be developed through yogic discipline *suksmadristi* or subtle reception of images. Aurobindo wrote (Ibid, p. 38-39):

Telepathy, clairvoyance, clairaudience, presentiment, thought-reading, character-reading and many other modern discoveries are very ancient powers of the mind which have been left undeveloped, and they all belong to the *manas*. The development of the sixth sense has never formed part of human training. In a future age it will undoubtedly take a place in the necessary preliminary training of the human instrument. Meanwhile there is no reason why the mind should not be trained to give a correct report to the intellect so that our thought may start with absolutely correct if not with full impressions.

Sri Aurobindo while analysing the causes of inefficiency of the senses, as gatherers of knowledge, attributes it to `insufficient use'. Students, he suggests, should overcome tamasic (optuseness of the mind and the senses) inertia and ought to be accustomed to catch the sights, sounds, etc., around them, distinguish them, mark their nature, properties and sources and fix them in the *citta* so that they may be always ready to respond when called for by the memory. 'Attention' according to him, is the chief factor in knowledge and considers it the first condition of right memory and accuracy. Besides attention 'concentration on several things at a time' says Aurobindo is often indispensable. He holds the view that it is quite possible to develop the power of double concentration, triple concentration, multiple concentration, which is a matter of *abhyasa* or steady natural practice.

Along with faculties of memory, judgement, observation, comparing and contrasting and analogy which are indispensable aids in the acquisition of knowledge, Aurobindo emphasizes Imagination as the most important and indispensable instrument. It has been divided into three functions, the forming of mental images, the power of creating thoughts, images and imitations or new combinations of existing thoughts and images, the appreciation of the soul in things, beauty, charm, greatness, hidden suggestiveness, the emotion and spiritual life that pervades the world. 'This is in every way as important as the training of the faculties which observe and compare outward things' (p. 47). These mental faculties, as Aurobindo suggests, should first be exercised on things, afterwards on words and ideas.... All this should be done informally, drawing on the curiosity and interest, avoiding set teaching and memorising of rules.

Sri Aurobindo is critical of the practice of teaching by snippets which is in practice in the existing system of education. Teaching by snippets, says Aurobindo, must be relegated to the lumber—room of dead sorrows. He is critical since:

A subject is taught a little at a time, in conjunction with a host of others, with the result that what might be well learnt in a single year is badly learned in seven and the boy goes out ill—equipped, served with imperfect parcels of knowledges, master of none of the great departments of human knowledge (Ibid, p. 32).

He characterizes such a system of education as one attempting to 'heighten this practice of teaching by snippets at the bottom and the middle and suddenly change it to a grandiose specialism at the top. This is to base the triangle on its apex and hope that it will stand' (p. 32). Aurobindo has, therefore, found some meaning in the old system which was more rational than the modern: 'If it did not impart so much varied information, it built up a deeper, nobler and much more real culture. Much of the shallowness, discursive lightness and fickle mutability of the average modern mind is due to the vicious principle of teaching by snippets' (p. 32).

However, Aurobindo is clear that in the future education we need not bind ourselves either by the ancient or the modern system but select only the most perfect and rapid means of mastering

knowledge. For him, every child is an inquirer, an investigator, analyser, a merciless anatomist. Appeal to these qualities in him and let him acquire without knowing it the right temper and the necessary fundamental knowledge of the scientist. Every child has an insatiable intellectual curiosity and turn for metaphysical enquiring. Use it to draw him on slowly to an understanding of the world and himself. Every child has the gift of imitation and a touch of imaginative power. Use it to give him the ground work of the faculty of the artist (p. 34-35). It is by allowing Nature to work that we get the benefit of the gifts she has bestowed on us Aurobindo is particular that the first attention of the teacher must be given to the medium and the instruments and, until these are perfected, to multiply subjects of regular instruction is to waste time and energy. 'The mother tongue', he says 'is the proper medium of education and therefore the first energies of the child should be directed to the thorough mastering of the medium' (p. 34). In connection with language teaching he advocates that when the mental instruments are sufficiently developed to acquire a language easily and swiftly, that is the time to introduce him to many languages, not when he can partially understand what he is taught and masters it laboriously and imperfectly. He believes in the disciplinary value of learning one language, especially one's own language, which he says, prepares one for mastering another. He maintains that with the facility developed in one's own language, to master others in easier.

The psychic and spiritual education

Aurobindo also speaks of mental and psychic education, but his real interest is in a still higher stage, which according to him is spiritual or supra-mental education. This does not imply the annihilation of the individual but his enrichment through contact with the Absolute. The spiritual stage transcends the mental and the psychic stage. The justification for psychic and spiritual education rests upon three important considerations: a) education should provide to the individual a steady exploration of something that is inmost in the psychological complexity of human consciousness; (b) the most important question of human life is to consider the aim of human life and the aim of one's own life and one's own position and the role in the society; and this question can best be answered only when the psychic and spiritual domains are explored and when one is enabled to develop psychic and spiritual faculties of knowledge; and (c) the contemporary crisis of humanity has arisen because of the disbalancement between the material advancement on the one hand and inadequate spiritual progression. If, therefore, this crisis has to be met, development of psychic and spiritual consciousness should be fostered. Aurobindo tries to draw a distinction between psychic and spiritual in the following terms. At the life of psychic life, the individual feels an unbroken continuity in the world of forms and sees level as an immortal function in endless time and limitless space. The spiritual consciousness goes beyond time and space and is an identification with the infinite and the eternal. Aurobindo is expressing the same idea when he says that in psychic life selfishness must be discarded, but in the spiritual life there is no sense of the separate self. Aurobindo insists that it is not annihilation of the individual but its transformation which is the end of integral education. When man attains such education there is total transformation of matter. He calls it supramental education as it will work, not only upon the consciousness of individual beings, but upon the very substance of which they are built and even upon the physical environment in which they live.

An unprecedented kind of experiment in education (Joshi, 1998c) was launched by Sri Aurobindo and the Mother, when in 1943, a school came to be established at Sri Aurobindo Ashram at Pondicherry with merely 20 students on its rolls, soon it began to grow, and in 1951, when the number of students had increased, and studies in Higher Education had to be organized, it was expanded into Sri Aurobindo International University Centre. The Centre was conceived as one of the best means of preparing humanity for future that would be marked by the manifestation of a new light and power—the supra-mental light and power. It was launched so that the elite of the humanity may be made ready who would be able to work for the progressive unification of the race and who at the same time would be prepared to embody the new force descending upon the earth to transform it. The Centre conducted a programme of experimental research under the direct guidance of the Mother, and it became a laboratory of education for tomorrow (for details see Tewari, 1998).

The educational doctrine of Sri Aurobindo is closely linked with his futuristic vision of human destiny which is reflected in his statement: They should be children of the past, possessors of the present,

creators of the future. The past is our foundation, the present our material, the future our aim and summit (Aurobindo, 1990, p.12). Aurobindo's (1971) visionary mystic mind articulated a concept of life which was unique since he conceived of it as a lavish and manifold opportunity given us to discover, realize, express the Divine and accordingly, visualized a system of education which would help expression of unrealized potentialities, in line with his concept of life. This called for a creative vision and an extraordinary adventure. For him human destiny is an ascent towards the supermind, towards realization of the Godhead and his philosophy of education provides a forceful and resilient framework to attain this goal.

Note

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EDUCATIONAL THOUGHT TRANSFER IN VIETNAM FROM THE LATE NINETEENTH TO EARLY TWENTIETH CENTURY

Vo Van Dung

Although thought processing transfer of education in Vietnam from the late ninteenth century early to the early twentieth century could not make radical changes in society, it did mark brilliant successes in the history of education in Vietnam. This movement is a new wind blowing in Vietnam education, and it has left a lot of great values, such as education must be advanced and be in accordance with the requirements of history; education must be universal, and comprehensive to people; Education must be humanitarian. To do that we must proscribe education policies which are not suitable, and apply the best education of the world to develop perfectly.

INTRODUCTION

Education is training required skills and providing neccessary knowledge to future generations for a country, so that national prosperity or failure, strength or weakness is based on the education. In the feudal era in Vietnam, education is in favor of moral and literature teaching which lead to underdeveloped situation in this country. Before the requirements of history, the progressive intellectuals in Vietnam advocated educational reforms to modernize the country. Education transfer from the late nineteenth century to the early twentieth century in Vietnam has shown the development of Vietnamese ideology, and a reflection of the political sensitivity of the thinkers. The purpose of the educational transfer is to change the education of teaching moral and literature into an education of real study for real career.

CONTENT

Vietnamese Historical Conditions from the Late 19th Century to the Early 20th Century

In the late 19th century in Vietnam, Nguyen Anh founded the Nguyen Dynasty in 1802 with the King title as Gia Long. After ascending the throne, Gia Long attempted to eliminate the French influence out of Vietnam. In 1817, when the French government arrived at Vietnam to suggest that Nguyen Dynasty implemented the Treaty of Versailles in 1787 about ceding Da Nang border pass and Con Lon Island to French but Hue Court firmly rejected this pilot. By the mid-nineteenth century, the Court of Nguyen Dynasty not only implemented the policies about religious forbidance and Western hermit suppression, but also carried out close-door policies. So, they made the relationship between Vietnam and the European – USA capitalist countries become more strained. During this period, the Nguyen Court executed “close-door” policies but did not promote the intrinsic advantages in order to modernize the country and strengthen the potential national defence, so they did not trigger the shift in socio-economy. Under the Nguyen Dynasty, the private ownerships of land were much more developing than the previous dynasties, but they still did not have the dominant status compared with state possession. Besides, on paper, the King was still the owner of all the terriority in country.

About economic issue, the dynasty radically carried out "esteeming agriculture, containing trade" policy. In both domestic and foreign trade, the Nguyen Court executed a exclusive policy firmly. In term of trade, rice and salt transportation - two items were considered extremely significant - were managed exclusively by the state. Anyone who offended against the law would be severely punished. With regard to foreign trade, the Nguyen Court also imposed the monopoly regulations on people, which they restricted the trade with foreign countries. In case of trade, there were a lot of cumbersome procedures, high taxation and the corruption of mandarins.

In 1858 the French began their conquest in Vietnam. After seizing control of Vietnamese nation, the French set the colonial ruling apparatus. France began to exploit the region for its natural resources, cheap labor exploitation and broadened the commodity markets. However, the patriotic scholars noticed that the way of national independence defense of Vietnamese people in the feudal period was no longer appropriate. But due to the extreme thoughts, the Nguyen Court was not clear-headed to the rapid changes in the world, which led the Nguyen Court consecutively failed in the struggle for the national independence defense. Typically, French colonialism almost completed the process of pacification, quelled the patriotic uprisings inside Vietnam (only the Yen The uprising of De Tham scholar was still operated in a small scale and then it was completely quelled in 1913). French colonialism, on the one hand, tried to reinforce and complete their political apparatus and military; on the other hand, they intensified the exploitation in Vietnam on a large scale quickly and systematically. Thus, in Vietnamese society from the late 19th century to the early 20th century, there were many remarkable changes in both sides of economic and social structures. As regards economics, with the import of capitalist production mode, the feudal production mode which was self-sufficient and self-granted did not monopolize the economics as it did before. As for politics, the French carried out the autocratic policy with their severe repression apparatus. All the power were in the hands of the French government officers, such as Governor-General of French Indochina, Cochinchina Governor, Annam of French Resident Superior, Tonkin Resident Superior, the provincial Ambassadors, the apparatus of military, police, tribunals ...etc. The French colonialism turned the Cochinchina Kings and madarines into puppets and mymidons; induced and colluded with the feudal landlords; bribed the officials and first-ranked generals in the aim at repressing, terrorizing and stifling the freedom and democracy as well as suppressing the struggle of Vietnamese people in a sea of blood. Particularly, the French colonialism divided the country into three regions; there was a separate government in each region; they merged these 3 regions with Laos and Cambodia to establish the Federal French Indochina in the attempt to delete the name of Vietnam out of the world map. At the same time, the French colonialism also promoted separation and hatred among the North (Tonkin), the Central (Annam), and the South (Cochinchina); caused disunity among kinds of religion, peoples, provinces and even among Vietnamese families and people with people of Indochinese peninsula. The patriotic activities of Vietnamese people are banned and suppressed by French colonialism since they tried to prevent the influence of advanced culture in the world into Vietnam as well as to carry out an obscurantism policy for the easy domination. As regards to education, the French colonialism established schools but only in the aim at training mymidons and popularizing French culture. All of French policies formed a cultural trend as colonial bourgeoisie in the colonies established in Vietnam. The invasion and policies of French colonialism unintentionally made Vietnam participate in the orbit of the modern world.

The import of a new exploitation policy which French colonialism brought into Vietnam, together with the feudal relation of exploitation of indigenous society, transformed Vietnamese society. "The new social strata and new social relation emerged and more and more expanded" (Nguyen Van Khanh, 1999, p.60). The landlord stratum was classified into three different catergories: primary, secondary and great landlords, among whom several landlords went bankrupt; the remaining ones who were born and grew up in a nation which was embed with a tradition of patriotism against foreign aggression and was oppressed in term of brutal domination of the politics and economy, so a large part of primary and secondary landlords who had conflicts with French colonialism could not stand the humiliation of losing independence and then participated in the struggle against the colonialism and reactionary mynidons. Peasantry class made up about 90% of the population. They were oppressed and exploited severely by the imperialist, feudal landlords and bourgeois class. Farmers' lands were not only appropriated by the colonial capitalist but also suffered from the exclusive economic policies,such as low buying but high selling, exorbitant taxation, usury ... etc, which were set by the imperialist and feudal who pushed farmers into the path of impoverishment without escape. A few people sold their labor, worked in some factories, mines, plantations or were forced to be coolies in the other colonies of the French empire. A majority of people still worked on the fields and were exploited severely in a country which was formerly owned by them.
In the early years of the 20th century, the new social forces which were formed also affected the national movement. They were bourgeoisie stratum and urban petite bourgeois stratum, who merged

together into a class after the First World War (1914-1918). The bourgeoisie was formed under the oppression of French capitalist and fierce competition. Thus, the number of Vietnamese bourgeois was not many with weak economic power and feeble political influence. In the process of development, the Vietnamese bourgeoisie was divided into two parts: comprador and national bourgeoisie. Studying the world situation with the economic, political and social realities in Vietnam under the Nguyen Dynasty before the French invasion and until French colonialism invaded Vietnam completely, Professor Tran Van Giau made some remarks: Even we knew that at that time Vietnam society did not urgently require the capitalist development but the struggle against foreign invaders pressingly demanded the reforms and self-strengthening; if not, if late, the country was lost. It meant that the success of the innovative process in Japan, the continuous failures of the armed uprisings in our country in the late 19th century, together with the comprehensive changes of the social life in Vietnam in the early 20th century, led to a new awareness in Vietnamese feudal intellectuals, which was the armed insurrection was no longer a suitable way of struggle. Now, if we desired to seize the power, we must find a different way and path from the previous way and it was a new way to reform the country in the model of Western countries, which "enlighten the people" was one of the basic goals at first. Thus, in the new context of the times, the issue of reforming the country was requisite. Nguyen Dynasty was still a monarchy under the Confucian ideology; the socio-economic base was the early capitalist – industry. Therefore, on the level of development of the times, they exposed their undevelopment. If there were not the reforms, the country would not be free out of decadence, and had not enough resources to survive independently. Reformative process decided the survival of the country, especially when we had to to cope with a completely new invasive force from the Western capitalists with much higher level of capitalism and industrial civilization than Vietnam. However, the proposed reforms of the Nguyen Dynasty were classifed into two types. A type of reforms on the basis and did not relate to the comtemporary socio-economic structure, such as reclamation, irrigation, saving poor people ...etc. The other type of reforms was the adjustification based on the preservation of the feudalism, which was really necessary but not in line with the trend of the times as well as did not meet the new requirements of the country development. Besides, among thousands of madarines and scholars under civil examination, there were some people who were aware of the feedble reality and precarious situation of the country made many proposals for educational innovation, economic reforms, national defence reinforcement ... in order to save the country out of the foreign invaders. Their proposed renewal which was beyond the former viewpoints and reached the peak of development at that time was developed mainly in Tu Duc Dynasty as in the reports of Nguyen Truong To, Nguyen Lo Trach, Dang Huy Tru ...etc. In these reports, the authors raised the criticism spirit about the negativity and backwardness of the country during the Nguyen Dynasty, especially in economy, national defence and education. These reforms were faithful to Nguyen Dynasty and did not negate Nguyen Dynasty or affected the existence of the monarchy. But the special features of these patriots were whether by violence policy or reform policy, they always attached their patriot to reform process. They advocated to innovate culture and education, enlightened the people's mind and improved the people's spirit. They suggested trading with foreign countries, following the steps of Western technology, developing industry and commerce, reforming education, strengthening national defence ...etc. Later, there were series of innovative movements emerged on the basis of educational foundation in the aim at developing people's intellectual standards to lead the country to overcome the backwardness and opened a new development trend. Until 1907, Dong Kinh Nghia Thuc movements and many other schools were established according to the model of Dong Kinh Nghia Thuc in many provinces. First of all, it was a patriotic movement, a canvass for independence. But at the same time, in term of thought, this was of a democratic movement, cultural reform and a movement of educational renewal.

Factors Affecting the Process of Ideological Education Movement in Vietnam from the Late 19th Century to the Early 20th Century

Along with the French invasion into Vietnam, the Western civilization also impacted on our country vigorously. Some typical ideologists like: Vonte- one of the founders of the French Enlightenment movement. He rejected the contemporary political institution of France and actively protected the oppressed people, always strived to promote human rights, protected personal freedom and the rights to be judged fairly. According to him, "Our wills are not free, but our actions are free" (Jean Wahl,

2006, p. 68). Vonte played an important role and had strong influence on the advanced bourgeois stratum in the struggle against the feudalism in France. Mongtexkio is a French enlightenment scholar. He expressed his hatred attitudes to the tyranny and advocated replacing it with a new form of government in order to help French citizens escape from the oppression and peremptory of the dictatorship. In his "Persian Letters", Mongtexkio borrowed two Persian guests' words in order to help French public recognize the real image of King Louis XIV who was wealthy, clinged to his power, extravagant and profligate. He was known as the most powerful King in Europe, who drove French people into a miserable situation. He did not have gold mines as his neighbor – the King of Spain, but he was much wealthier, because his wealth which was achieved by exploiting the vanity of his people was a treasure which was more inexhaustible than gold mines, etc ... "(Montesquieu, 2004, p. 296). He was well-known for promoting " law spirit" which always showed the wills and desires to build a new society which there were no oppression, injustice; a society was capable of bringing freedom for everyone and peace for humanity. Rutxo harshly criticized the feudal hierarchy and autocracy, supported bourgeois democracy as well as the rights and freedom of citizens, approved the equality between human regardless human origins. He said, "People are born free, but everywhere people have to live in chains of slavery" (JJRousseau, 2004, p. 52). Rutxo also gave a new conception of education which let children grow naturally; parents should not enforce their children according to their thoughts. His viewpoint about education completely opposed to the restrictive education base of feudalism and the Church at that time. In general, the authors strongly criticized the annachronic thoughts of the contemporary theocratic regime, and stimutaneously raised a viewpoint about building a new society. This perspective had a strong impact on the Eastern scholars from the late 19th century to the early 20th century, but later it was the basic theoretical premise for Vietnamese patriotic scholars who approved the reformers and innovators in Japan and China and then reached the thoughts of Western civilization.

Besides the impact of Western civilization, the progressive ideas of the East also had a strong influence on the ideological shift on education in Vietnam from the late 19th century to the early 20th century. Fukuzawa Yukichi was a Japanese politician, socialist, economist and educator. He contributed to promote the development of modern Japan. He said that "in Western civilization, social structure consisted of many different theories which developed at the same time, gradually approached each other and eventually merged into a civilization. And this process formed the freedom and independence "(UNESCO, 2004, p. 48). Fukuzawa Yukichi said that the education in traditional Confucianism in Japan was the biggest obstacle of civilization. It was both antiquated and underdeveloping; it was unchanged for a thousand of years, only esteemed affected appearance and disregarded the truth and principles. A few people who went to school only were taught to read and write but they were not encouraged to develop their creative and independent thinking. Therefore, Fukuzawa Yukichi incited people to pursue the real education of the West which was based on science and engineering. Each person in society, from the erudite scholars to the state officials with high status, the poor farmers or dealers, could go to school to perform their own tasks better, thereby they could make contribution to the development of society, unnecessarily learned to become a mandarin as the traditional thoughts of Confucianism.

China also influenced considerably on the shift of educational ideas in Vietnam from the late 19th century to the early 20th century. Kang Youwei (Khang Huu Vi) was the initiator who acquired the viewpoints of freedom, equality, and bourgeoisie humanity. He pointed out: freedom and independence are the natural rights of human. "All people were born with freedom and equal rights" (Cheung Lap Man, 1998, p. 661); he opposed all disparities and inequality, especially the inequality between men and women. Along with Kang Youwei, the man who had influence on on the shift of educational ideas in Vietnam from the late 19th century to the early 20th century was Ton Trung Son. He was a pioneer revolutionary politician of the Chinese democratic revolution in the early 20th century. His thoughts were an ingenious combination of national thoughts with freedom, equality and humanity of the Western bourgeois revolution. Ton Trung Son gave prominence to educational issue when there was a concept that the world civilization could put forward by means of knowledge. So, if there is no education, no country can be built. With the ideas which education was universal in order to improve people's understanding and foster talents for the country; all civilians were entitled to

equal education. Everyone, regardless of rich or poor, was entitled to equal education rights; children in social classes had the rights to learn at public schools. All these ideas had a strong impact on intellectual class in Vietnam and they became inevitable requirement to the shift of educational ideas in Vietnam from the late 19th century to the early 20th century.

The Process of Changing Education Ideology in Vietnam from the Late 19th to the Early 20th Century

The transformation was considered as an urgent demand for the existence and that development step had to be reflected in all aspects of society in order to switch from a society "promulgating power to people to empowering them", which was a change of thought, culture and spirit of a nation; it was a process requiring such factors as circumstances or people's consciousness to be ripe enough. This process of transformation had to cope with lots of obstacles like being banned, blocked or even killed. Regardless of the difficulties and challenges, the patriotic intellectuals still absorbed the reformative ideology of bourgeois democracy from the West through books written in Chinese and Japanese (new messages, new texts).These patriots turned the advanced ideas into a new ideological weapon for the national bourgeois democracy movement in the late 19th and the early 20th century. Ideological trend of reform in Vietnam during the latter half of the 19th century appeared as a result of combining the essence of Confucianism, Catholicism including modern elements of Western civilization and culture. In the early 20th century, the bourgeois democracy movement through the books by Kang Youwei, the example of Japanese reform, the constitutional campaign in China (1898), the Xinhai Revolution in China (1911), attracted many Vietnamese patriotic intellectuals, among whom Phan Boi Chau and Phan Chau Trinh were particularly outstanding. The emergence of reformative ideas in this period was also the inevitable result of the interaction between objective factors such as the historical conditions especially in term of economy, politics and society in the country in the late 19th century, importantly the invasion of French colonialism in contact with the Western civilization and subjective factors like the ardent patriotism, national spirit, the power of thought and intelligence of Vietnamese ideologists and intellectuals. Although the patriotic movement of the early 20th century revolution in Vietnam was bourgeois democratic but it differentiated into two distinct trends that were violence and reform. The violent trend advocated "using violent revolution to expel colonial empires and seize independence for people, but requiring aids from foreign countries, initially Japan" (Chuong Thau, 1982, p.36). Typically, there were many great patriotic Confucians including Nguyen Dinh Chieu, Vu Pham Khai, Phan Dinh Phung, etc. in the Royalist Movement. We can clearly see from Nguyen Dinh Chieu's power of literature that he criticized those who did harm to people and the country. Vu Pham Khai and Phan Dinh Phung desired to successfully launch patriotism to repel the French invaders. In addition, the development and self-improvement of Dong Du movement – a form of finding way to save the country- was initiated and performed by patriotic scholars who lived contemporarily with Phan Boi Chau. Phan Boi Chau considered that "The fate of our country is up to our people. All people in the country have the right to vote regardless of being rich or poor, old or young. "People also have the right to maintain or dethrone a King and to promote or demote a mandarin" (Phan Boi Chau, 1990, volume 6, p. 256). In the previous day, feudal states had advocated promulgating power to people, and now the improvement of Phan Boi Chau's thought was people were empowered.

In his previous written work in Dong Du movement, Phan Boi Chau clearly analyzed: people were poorly educated; civil rights were slighted and lack of solidarity were the causes for losing the country in Vietnam. In order to broaden people's knowledge, Phan Boi Chau stated that education had to be developed because "education is the root to build politics" (Phan Boi Chau, 1990, volume 2, p. 126). The idea of enlightening people's knowledge of Phan Boi Chau really made people change their old thoughts to get new consciousness which was higher and more appropriate for the development of the times. In order to do that we had to require innovation, and successful innovation required new people to reach new education. Therefore, he advocated the resistance agianst French by violence together with the assistance of Japanese government; transferring Vietnamese youth to Japan to educate and train their minds with the aim at building a talent force to be the core of recovering the independence of the country. From his point of view, he said that "If we do not sharpen our knowledge "mirrors" brightly, who will do a favor?; If we do not light our knowledge "lamps" brilliantly, who will help?"; Using our mind to keep pace with our civilized friends, using our autonomy to widen our knowledge"

(Phan Boi Chau, 1990, volume 6, p. 93). This idea became an important milestone in the whole education transformation in Vietnam at that time.
Phan Boi Chau proposed a practical education policy – an education associated with human life. According to him, in term of practical education, education had to be the origin of all activities, "education is also a root to construct politics, taxes, legislation; everything comes from education… After the reform, both the court and the society whole-heartedly took care of educating knowledge, morality, physicality and eveything" (Phan Boi Chau, 1990, vol 3, p. 184). Phan Boi Chau specified the education which was comprehensive and modern was completely different from the educational guideline of the feudal state. Besides, some "advanced" intellectuals appeared in the early 20th century, from the changes in Vietnam society caused by the colonial policy, they realized that uprisings to bring about national independence following the path of Royalist movement were not suitable. Opening up a new way of achieving independence by the national reform was needed at the time by "Enlighten the people's knowledge, improve the people's spirit and take care the welfare of the people". Other intellectuals supported the conduct of educational reform and the country had to reply on the help of French government. The Duy Tan movement was typical in the late 19th and early 20th century with such participants as Nguyen Truong To, Dang Huy Tru, Phan Phu Thu, Tran Dinh Tuc, Nguyen Lo Trach etc., with the aim at enriching the country, strengthening the Army in order to be strong enough to fight the invaders, which was done by the elimination of backward customs and the attempt to catch up with developed countries.

Realizing the reality of the country weakness, Nguyen Huy Tru and many other ideologists considered that the Confucian learning style which focused on quotations, sentences, or words in books but disregarded content values should be omitted, and people could not use only literature, but must acquire Western science and technology to boost production and make people become rich and the country become strong. He wrote "To have wealthy people and powerful country was not a duty requiring less worries" and "the principal to obtain such the property could not be underestimated" (Tra Linh, 1990, p. 372). He strongly objected the use of words, Confucian doctrine to beg the enemy's mercy for peace because "if negotiation is conducted, who can touch the enemy's heart" (Tra Linh, 1990, p.251). In order to reform education, he suggested a teaching method based on "problems" with the policy of "teachers in relation to learners" (teacher and learners get mature together), which is, in fact, "the democratization" of teaching and learning – a new and progressive viewpoint at this time. With this opinion, we see that Nguyen Huy Tru was completely right in the combination of teaching and learning.
Nguyen Truong To was a great scholar, a celebrity, an architect and a patriotic Christian in the mid-nineteenth century. Although he was born in a Catholic family, Nguyen Truong To learned Four Books and Five Classics (Shih Shu and Wu Ching) of Confucianism throughout. However, Nguyen Truong To was the person who had the advocacy of reforming the country as "each period sets up its regimes. People born in which period can only do things in that particular time. Therefore, those living in the previous age finished their own works in the past. How can the past regulations be allowed to keep forever when the times have changed gradually" (Truong Ba Can, 1998, p. 260). In Nguyen Truong To's manuscript, he talked about the innovation in many aspects such as economy, culture, society, foreign affairs, military and education.
Nguyen Truong To fiercely criticized our educational policy in the feudal time and proposed new improvements. He said "What is learning? – That is learning what is unknown to know and then practising. Look back on our study nowadays, what teachers teach learners was old issues in the old days, which no one learns now…How strange it is!" Japanese and Korean also read Chinese books, but they did it for fun. When they work, they follow their books… Our country is in the state of being blocked by four sides, the outsiders are going to encroach to set up their dens. It is time for us to develop people's mind and strength to combat and protect the nation" (Truong Ba Can, 1988, p. 192). He clearly showed that the feudal education only concentrated on impractical theories instead of focusing on reality. Nguyen Truong To supported the application of real education for the purpose of "learning practical things will be pragmatic" (Truong Ba Can, 1998, p. 193) and "fostering talents is a wide road to the wealth" (Truong Ba Can, 1988, p. 191). He advocated the comprehensive reform program in education by acquiring Western education. However, he did not entirely reject the old education, but emphasized the study of new things on the basis of the old ones "What I have presented

above does not desire to get rid of the old ones for the pursuit of the new ones. However, we have to select our available goodness and include other people's great ones which have created. So, the new things belong to both us and the others, but the available things do not belong to the others. (Truong Ba Can, 1988, p.137). Especially in the educational reform program, Nguyen Truong To put forward an idea of using Chinese letters as the national letters. He considered that "Now we use Chinese letters, then convert Chinese letters into Vietnamese's, there's no need to learn the meaning, the word "chifân", for instance, is pronounced "eat rice" in Vietnamese. Hence, everyone will understand the word when they hear it. Is it easy and less complicated?" (Truong Ba Can, 1988, p. 256). His idea was for the desire of Vietnamese people using their own scripts. Therefore, the matter of reforming education by Nguyen Truong To aimed at developing new talents to supplement and gradually replace the old government officials. If this project was done, a big change in the management mechanism and the State operation would have been produced, led to a political reform according to the model which was highly assessed by Nguyen Truong To.

Phan Chau Trinh was a great representative of the advanced patriotic intellectuals in the early 20th century. His thought was influenced by the changes in the Eastern Asia through the contact with new messages, new texts. Phan Chau Trinh claimed that improving the nation must base on the French civilized achievements. With the advocacy of national reform following the route "Enlighten the people's knowledge, improve the people's spirit and take care the welfare of the people", it can be seen that Phan Chau Trinh was deeply concerned about the issue of people's intellectual standards through such arrangement. He gave prominence to this issue due to the role of Confucianism coming to an end in Vietnamese history, even preventing the existence and development of the nation. He wrote:

"Nothing more than knowing some words
Perhaps, it helps obtain benefits from the people" (Huynh Ly, 1983, p. 128).

To reform education, Vietnam needed to learn Western advanced scientific and technological knowledge, changed the old learning style and developed learning movement as new style. He showed the attitude and opinions supporting Phan Boi Chau in the idea of sending the youth to foreign countries to learn and acquire modern knowledge. Phan Chau Trinh said that the country would be recovered by adjusting examination regulations, replacing the old education with the one choosing the pragmatic knowledge to be the content, teaching necessary understandings to people for their life. He strongly disagreed the learning design which gave close attention to the balance of word forms with hollow content and which degraded people's heart and mind.

Phan Chau Trinh was one of the pioneers who proposed a new educational base focusing on practical content to meet the country's development and reformative demand. It did not stop at the idea of building the reform orientation effectively in reality, but also recognized the role of occupation development in the development of economy and society in general.

Discussion

Educational thought transfer in Vietnam from the late nineteenth century to the early twentieth century has left many values such as: (1) The changes in education have to be progressive and in accordance with requirements of history. Researches on educational thought transfer in Vietnam in this period shows that the thinkers appreciated the development trend of the times, and the content of education to train new citizens has a positive aspect focusing on serving the community. It is important factor in building the country. For society, education must be linked to the social science subjects. For material production, education is associated with the natural science subjects, and to every person, education is expressed through social activities and business operations as in art , in culture and in social movements. Education is no longer a private affair of the school but also for the whole family and the whole society. For the first time in the history of the Vienamese people, the patriotic scholars have publicly criticized the views of Confucian education and they change its content with new educational methods in accordance with new life and history. These ideas, in the beginning could not become a complete theoretical system, but has met the aspirations of the masses oppressed by colonial exploitation and feudal. Transition education during this period contributed to awakening the patriotism of Vietnamese people at the time, and initially attacked the feudal ideology, paved the way for new ideas. (2) Education must be for all people, in all fields. In the previous time,

the purpose of education is learning to become Confucian mandarin, to become a gentleman. But educational purpose in the late 19th century is to build a patriotic education. The main success of that move is to raise new human form, the human of reforming era. Those are values which are very useful for us to integrate into the regional and world to protect and develop the national culture. Free education which aims to ""khai dân trí, chấn dân khí, hậu dân sinh" (broaden people's knowledge, improve people's spiritual power, support people demand) has rewarded valuable lessons in all time. The method that the patriotic progress confucianist put forward is to train students the skills needed, such as listen to lectures, read books and documents, and summarize lessons, note down the lessons on his understanding, systemize values, write scientific report, work in teams, do presentations, etc ... (3) Education must have humanization. This process of transformation has passed its scope to initiate the movement to spread ideas, and broaden extensive knowledge. The transformation has developed a patriotic education, innovation, inspire patriotism, national consciousness of the people through education. We can say that this is the first time in the history of the people of Vietnam, appears the thought of building a completely new education in order to fulfill the political objectives of national liberation from invaders. And education are changing synchronously in all fields such as objects and educational objectives, educational content and methods of education. The education which uphold patriotism, national spirit are of tremendous value to the education nowaday, when Vietnam integrates into the region and the world at the same time of protecting and enhancing culture of the country.

CONCLUSION

The process of ideological education trasfer in Vietnam from the late nineteenth century to the early twentieth century still have some drawbacks, but it did mark a brilliant success in the history of education in Vietnam. The change in education during this period is subject to the influence of Western civilization through the intermediary of Chinese, Japanese and directly from French. The progressive patriotic scholars have noticed the education at the time is no longer meet the needs of the country's history. They think that national liberation must first raise the people knowledge, foster talents, erase the backward nature of Confucianism education. From the perception of the impact of education for development in many countries around the world which makes thinkers decide to change the thoughts, the ways of learning in the country to have an innovation in general, and an "education reform" in particular. This process makes the movements appear with new colors such as Dong Du (1904 - 1908), Duy Tan (1906 - 1908) and Dong Kinh Nghia Thuc (1907). Although all these movement failed, but it has made a strong transformation on all aspects in all fields in general and in education in particular.

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SUPPORTING SCIENCE EDUCATION RESEARCH THROUGH AN INNOVATIVE NEW MASTERS PROGRAMME

Joseph Roche
Mark Prendergast

Science education in Ireland is facing a number of challenges. Delays to curriculum reform at post-primary level and increasing numbers of responsibilities for scientists in higher education are becoming considerable obstacles to progress in this area. The growth of higher education over the last few decades has been particularly nuanced in the area of science education as scientists are being tasked with not only their educational responsibilities but also with driving economic growth through research and development and the commercialisation of ideas. Science teachers are expected to utilise an outdated curriculum to provide the next generation of scientists to sustain a 'knowledge-based economy'. To help scientists and science teachers overcome these barriers, an innovative new master's programme has been established at Trinity College Dublin. This course aims to give its participants the practical and academic skills needed to critically analyse the role of science in society and to cope with the growing challenges facing the field of science education.

CONTEXT OF THE COURSE

The past century has seen a global trend towards boosting the number of people in higher education — "developing countries now have higher enrollment rates than European countries did only a few decades ago, and currently about one-fifth of the world cohort is now enrolled in higher education" (Schofer & Meyer 2005, p. 898). For science education it has been especially pronounced as education in this area has come to be seen as crucial for helping drive innovation and economic growth. Ireland witnessed a rapid expansion in the number of students studying science at post-primary and third-level in the mid nineteenth century when free education, coupled with an emphasis on technical education (areas outside the arts and humanities — primarily technology and science), led to numbers soaring. Support from the government ensured that Irish education became the foundation of economic growth, shifting the focus away from manufacturing and agriculture and moving towards a 'knowledge-based economy': "the Irish state made a long-term commitment to investment in education from the 1960s, largely absent in the first generation of independent statehood, which was sustained over the following two generations" (Loxley, Seery & Walsh, 2014, p. 189). Research funding from the European Union added momentum to this movement and science education, especially at third-level, was required to expand in order to produce more "technically qualified people to support industrial development" (Harkin & Hazelkorn 2014, p. 2). The Programme for Research in Third-Level Institutions funded €1.2 billion for basic research from 1998 onwards as Ireland capitalised on massive foreign investment in research and development. This led the Irish government to improve support for science and education at all levels, resulting in Ireland achieving a significant proportion of graduates in science, technology and engineering — 23% compared with the EU average of 9.3% (European Commission 2004). The financial crisis and the subsequent recession in Ireland caused a sea-change in Irish state investment policy towards science. Massive cuts were made to basic research funding while the government prioritised 14 narrow research areas that were most likely to lead to short-term commercialisation success (Butler 2015). This put additional pressure on early career scientists in higher education competing for dwindling amounts of basic research funding. The focus on securing research funding has seen this become the most important objective for new scientists to the detriment of their contribution to science education. While most scientists in higher education in Ireland are expected to teach, supervise and assess students, the time constraints imposed by seeking funding, administrative duties and other responsibilities has seen teaching and learning reduced to an inconvenient hindrance rather than a priority for career progression and promotion. We have developed a Master of Education (M. Ed.) course at Trinity College Dublin in order to help science graduates, science teachers and early career researchers to cope with the demands of working in science education.

AN INNOVATIVE NEW PROGRAMME

Trinity College Dublin is the ideal home for an innovative new master's programme in science education — M. Ed. (Sc.). As well as having a respected international reputation and resources it also has a recent history of supporting progressive and sometimes radical new course development, including its pioneering partnership with Google Ireland in order to instigate change in secondary school teachers' interactions with technology (Roche 2014). The M. Ed. (Sc.) can be taken on a one year full-time basis or on a two or three year part-time basis. It includes a taught component comprised of four modules, each including 25 hours of direct contact time. It also contains a research component that involves carrying out a research project and writing a dissertation under the guidance of a supervisor in a relevant area of educational research. Independent learning, at both personal and group level, is actively encouraged. The course is designed around four modules: "Science in Society", "Communicating Science", "Learning Theories" and "Frontier Research and Current Debates", while the overarching aim of the course is to give participants a critical understanding of the role of science in society. A number of key areas are highlighted, such as investigating the scientific method, the history of science, science pedagogy, publishing, grantsmanship, policy, governance and communication. Understanding how and why the scientific method works can help identify its potential applications outside of the strict confines of scientific research and how it might support areas as diverse as education, politics, law and economics. The history of science is almost never considered on undergraduate science courses. As a consequence many scientists and science teachers often do not have a full appreciation of how their discipline came into being and what lessons

can be learned from the past. Pedagogy is crucial to early career scientists as they are often expected to gain experience giving tutorials, assessing students, teaching, creating content and presenting lectures. What is often lacking is training or the provision of theory to aid young researchers in basing their own educational approaches on evidence rather than reverting to the approach that they received: "science faculty members have little, if any, professional training in teaching at the college level" (Sunal et al. 2001, p. 247). Publishing in any research discipline is a vital skill in order to contribute to the field and the community but increasingly it has become a metric for judging career advancement potential. Grantsmanship is the art or ability to craft successful research grants on a consistent basis. After the skills of utilising the scientific method and scientific writing, this is seen as one of the most important skills for a scientist to master. Science governance will be investigated so that students are better equipped for engaging in dialogue with policymakers and disseminating their research to help inform policy. Public engagement is becoming more important due to the European Commission including 'Responsible Research and Innovation' (RRI) as a cross-cutting action of its research and innovation programme, Horizon 2020 (Owen, Macnaghten, & Stilgoe 2012). According to the tenets of RRI, scientists have a responsibility to ensure that members of the public are not only aware of the research they are carrying out but to strive to provide means for them to engage in dialogue around it and have their opinions taken into consideration by the researchers. The M. Ed. (Sc.) will provide students with the opportunity to critically analyse cutting-edge research in the field of public engagement as well designing strategies for current scientific research within the university, especially in the domain of informal learning and citizen science. Science communication is a well-established field with more than 50 years of research and theory (Bauer, Allum & Miller 2007; Trench, 2008). Yet despite all of this work and the obvious overlaps with the field of science education, there remains a gap between the two fields. Students taking the M. Ed. (Sc.) will learn from the field of science communication and have the opportunity to attend joint science communication/education symposia. The course will provide the opportunity to bring together different disciplines that all utilise science in education. Having primary and post-primary teachers taking the course alongside graduate science students will allow for shared learnings and best practice as Barinaga (1991, p. 1061) notes: "the close bond between teachers and working scientists is turning out to be a key in scientists' efforts to improve science education". The decision to open the course to social science and humanities graduates with a professional interest in science means that there will be a rich and diverse range of participants on the course.

DISCUSSION AND CONCLUSION

The recent challenges to the field of science education are not confined to formal education. Public understanding of science and engagement with science are seen as crucial to societal progress. A key component of the M. Ed. (Sc.) is the relationship with Science Gallery Dublin — a world-leading public engagement space that will bring expertise and practical experience to the course for all participants. The research funding that is available in Europe will continue to target science and technology issues that are seen as economically and socially important (Stilgoe, Lock & Wilsdon 2014). The European Commission's research and innovation programme Horizon 2020, will also see more emphasis on the development and promotion of innovative pedagogies in science and technology education (European Commission, 2014). The new M.Ed(Sc) will help prepare the field of science education for the challenges to come. The course will seek to not only attract Irish scientists and science teachers but also to reach out to the international science education community and invite them to join Trinity's vibrant and diverse community of almost 17,000 students representing 122 nationalities. While there are many challenges ahead for science education and researchers working in this field, innovative new courses like the M. Ed. (Sc.) can help ensure that society is prepared to face those challenges.

FURTHER INFORMATION

Applications can be made here:

www.tcd.ie/education/courses/masters/science

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EDITORIAL

CAN FREE AND COMPULSORY SCHOOL EDUCATION BY 2030 IN INDIA BE A REALITY?

All developed nations make provision for free school education for a stipulated period for their future citizens. Some nations also provide pre-school education. European Commission/EACEA/Eurydice (2016) mentioned that compulsory period of schooling in European nations vary from 9 years (Switzerland) to 13 years (Hungary…). Starting age of schooling varied from 3 years (Hungary) to 7 years (Estonia..) and leaving age varied from 14 years 5 months (Serbia) to 19 year 6 months (Macedonia). In UK, leaving age was 16 years for all its four regions, but starting age was 4 years for Northern Ireland and 5 years for other three regions-England, Scotland and Wales. While UK has a compulsory schooling foer 11-12 years, will India be able to have at least 10 years of schooling (Classes I - X) by 2030, given the situation that it has yet to grapple with achieving compulsory school education for 8 years (Classes I-VIII)? In 1950, the constitution of free India, stated in its article 45 of the Directive Principles that "The State shall endeavour to provide, within a period of ten years from the commencement of this Constitution, for free and compulsory education for all children until they complete the age of fourteen years." There was no mention of the starting age. In order to give a boost to ongoing efforts, the central government went for constitutional amendment to make elementary education a part of fundamental right for citizens of the country. The Constitution (86th Amendment) Act 2002 (MLJ 2002) inserted Article 21 A in the Constitution which states that "The State shall provide free and compulsory education to all children of the age of six to fourteen years in such manner as the State may by law, determine." This amendment also substituted earlier provision under Article 45 of Directive Principles which now states that: "The State shall endeavour

to provide early childhood care and education for all children until they complete the age of six years". A child of six years age is covered both in case of school education under Article 21 A of fundamental right as well as in case of ECCE under Article 45 of Directive Principles. Should Article 45 be modified to specify the starting age and leaving age and reduce upper age to five, instead of six years, which is covered under Article 21?

MWCD (2017) mentions that Integrated Child Development Services (ICDS) scheme of the Ministry of Women & Child Development, functioning since 1975 covers 0-6 years of age including pre-school education for 3-6 years of age. Should this scheme be modified to have upper age limit as 5 years and have its pre-school education for children of 3-5 years, instead of 3-6 years, so that there is no overlapping of 6 years of age covered under Article 21 A of fundamental rights?

MLJ (2009, p. 5 - Section 11) states that

> "11. With a view to prepare children above the age of three years for elementary education and to provide early childhood care and education for all children until they complete the age of six years, the appropriate Government may make necessary arrangement for providing free pre-school education for such children".

Should this section be modified by making Five years as upper age limit for pre-school education?

Should this section regarding ECCE be deleted, as ECCE is being covered by ICDS?

MLJ (2009, p. 8 - Section 28) states that "No teacher shall engage himself or herself in private tuition or private teaching activity." Should this provision be modified by inserting "getting appropriate salary as applicable to central govt. teachers on regular basis" after the word

"teacher"? MLJ (2009, p. 8- Section 23(3)) states that "The salary and allowances payable to and the terms and conditions of service of teachers shall be such as may be prescribed." The teacher salary varies from one state to another. It has been noticed that in one state, a person appointed to teach, may not be called as 'teacher" so that monthly remuneration can be as low as only Rs. 5,300/-(Five thousand and three hundred) per month. If such a person is married and is having a family, how can that family be managed with this small amount of remuneration? Has this situation compelled many low paid individuals working in the posts of teachers not to teach properly in the class and indirectly persuade parents to send their children to coaching classes, conducted before and after school hours or to send their children to attend coaching at teachers' residences or get teachers to coach their chidren at their homes? Indirectly, it makes all types of elementary school education fee charging. Again, as there is variation among pay scales prescribed by the Central government and State governments, should not a national right to education act require a national level provision for teacher salary, based on duration of training? Should salary of teachers with (a) Two year B.Ed. degree (5 years after +2) be higher than salary of teachers with B.A./B.Sc.& B.Ed. degree (4 years after +2) and One Year B.Ed. degree (4 years after +2)? Should not salary of a teacher with 2 year B.Ed. be more than that of 1 year B.Ed.?

Private tuition is also known as 'Shadow Education'. According to Bray & Kwo (2014) it runs parallel to formal system of education. OECD (2016a & b) reported results of latest PISA (Programme for International Student Assessment), in which, South East Asian nations dominated. Shadow education might have helped their students to perform better. Banning private tuition will not be effective as many parents also go for providing private coaching for their children so that during evening hours children do not watch TV with parents. A few years ago, it was observed that a four year old daughter of a Chemistry lecturer was found in a coaching class for pre-school children. There are also parents who send their children for private

coaching to recover lost hours of teaching due to multi grade teaching or teacher absence. Again, if high fee charging schools and even schools having air conditioned classrooms are to continue, there may not be any solution of issue of equity in education by banning private tuition. Rather in order to tackle menace of private tuition that may be reflected in advance knowledge of a few students availing private coaching, the school should have a record of students attending private coaching centres or getting private coaching at their homes and making the teachers appraised of the developments so that they can handle these students properly in the classroom, by giving them advanced level task, while proceeding with students not having any private coaching.

MLJ (2009, pp. 5-6 - Section 12) provides reservation for children belonging to weaker section and disadvantaged group in the neighbourhood. This provision is also applicable for admission to pre-primary class in a school. The act provides state reimbursement of expenditure. Govt. also spends for pre-school education for all through ICDS, which is a scheme of the central government. Hence, should the nation consider deleting provision for 25% quota for admission in pre-school classes, as it may amount to unnecessary doubling of govt. expenditure? The act provides that school "shall be reimbursed expenditure so incurred by it to the extent of per child expenditure incurred by the State, or the actual amount charged from the child, whichever is less, in such manner as may be prescribed." This provision accepts the fact that government schools are inferior to the private schools. Should not the nation raise the quality of government schools so that parents do not opt for private schools?

MLJ (2009, p. 4 - Section 7 (6)) mentions "The Central Government shall (a) develop a framework of with the help of academic authority specified under section 29". MHRD (2009, section 29(2)) states that " *(2)* The academic authority, while laying down the curriculum and the evaluation procedure under sub-section *(1)* shall take into consideration the following, namely: …*(d)* development of physical

and mental abilities to the fullest extent;.."Should the act be modified by adding "emotional, spiritual" in clause (d), after the word "physical"? Should the act be modified by adding another sub section which may be "(i) availability of teacher time per class"? This inclusion becomes necessary because of the fact that as per MHRD (2009 Schedule), there are primary schools with 5 classes (I-V) having (a) 2 Teachers (Teacher time 2/5 per class), (b) 3 Teachers (Teacher time 3/5 per class), (c) 4 teachers (Teacher time 4/5 per class) and (d) 5 teachers (teacher time Full 5/5 per class). If these types of schools are to exist, curriculum needs to be developed for each type of school. Intentional dodging of this issue is enforcing private tuition on poor parents. In case, the nation is going to have national curriculum framework, there has to be same amount of teacher time per class be available for every school. It presupposes that there is no double or triple class teaching by any teacher and there is at least one teacher per class / section, in every govt. and govt. aided primary school, even if number of students is less than 30 in a class /section. In areas accessible by road, it may be possible to have a school with 100 children by arranging a vehicle for transport and maintaining one teacher per class and have the state curriculum. Since low student strength will not provide one teacher per class in case of segregated habitations in hilly and desert area and islands, there is a necessity of a separate curriculum taking essentials of state curriculum or having a residential school (community centre) having one teacher per class.

MHRD (2010a) authorised the "National Council of Educational Research and Training as the academic authority to lay down the curriculum and evaluation procedure for elementary education, and to develop a framework of national curriculum under clause (a) of sub- section (6) of section 7 of the Act." According to MHRD (2010b), "NCF, 2005 shall be the national curriculum framework till such time as the Central Government decides to develop a new framework." As states differ in their school system such as number of classes in a middle school/ upper primary school, should NCERT

role be limited to developing national level benchmarks and standards for three categories of schools-Jawahar Navodaya Vidyalayas, Kendriya Vidyalayas (Central Schools), Sainik Schools? Should the act be modified to allow states, instead of developing state curriculum, go for developing benchmarks and standards for (a) residential schools exclusively meant for Scheduled Tribe /scheduled caste students, (b) schools for physically and mentally handicapped and if multi grade teaching is to continue, benchmarks and standards for a five class/section primary school with (a) 5 teachers, (b) 4 teachers, (c) 3 teachers, and (d) 2 teachers? Since, there are slow learners, learners who do not attend classes regularly, but enjoy non-detention policy and go up the ladder every academic year, and schools victim of teacher shortage, teacher truancy and multi grade teaching, should the nation allow individual school parent teacher body to decide curricula for the concerned school?

MLJ (2009, p. 9 - Section 29(2)) mentions that

> "The academic authority, while laying down the curriculum and the evaluation procedure under sub-section (i) shall take into consideration the following, namely-… (h) "comprehensive and continuous evaluation of child's understanding of knowledge and his or her ability to apply the same."

State education authorities vary in their understanding of strategies for evaluation. A few days ago, a school teacher informed that answer books of a school in a Block are to be examined by teachers of another block. In such a situation, what a teacher teaching more than one classes will do? Will s/he dictate answers to students and train students in malpractice as part of skill development? Should the act be modified by inserting the word "internal" before the word "evaluation"? MLJ (2009, pp. 4-5) states that "The appropriate government shall -…(h) ensure timely prescribing of curriculum and courses of study for elementary education;". Should the words "and courses of study" be deleted as courses of study is part of curriculum?

MHRD (2017) states that academic authority shall "…(c) prepare class wise, subject wise learning outcomes for all elementary classes. Should the RTE rules be modified by inserting the words "school category wise" after "subject wise", and the word "outcomes", be replaced by "standards and benchmarks"?

National Policy on Education 1986 (With modifications undertaken in 1992) (MHRD 1992, p. 41) gave stress on physical education including yoga education in the following words:

> "Sports and physical education are an integral part of the learning process, and will be included in the evaluation of performance. A nation-wide infrastructure for physical education, sports and games will be built into the educational edifice. The infrastructure will consist of playfields, equipment, coaches and teachers of physical education as part of the School Improvement Programme. Available open spaces in urban areas will be reserved for playgrounds, if necessary by legislation. Efforts will be made to establish sports institutions and hostels where specialised attention will be given to sports activities and sports-related studies, along with normal education. Appropriate encouragement will be given to those talented in sports and games. Due stress will be laid on indigenous traditional games.
>
> As a system, which promotes an integrated development of body and mind, Yoga will receive special attention. Efforts will be made to introduce Yoga in all schools. To this end, it will be introduced in teacher training courses."

National Curriculum Framework 2005 (NCERT 2005 p.57) states that:

> "The more recent addition to the curriculum is yoga. The entire group must be taken together as a comprehensive health and physical education curriculum, replacing the

> fragmentary approach current in schools today. As a core part of the curriculum, time allocated for games and for yoga must not be reduced or taken away under any circumstances."

The Twelfth Five Year Plan document (Planning Commission 2012, p. 78) states following strategies for physical education:

> "School playgrounds of NVs and KVs will be opened up to neighbourhood schools. Local bodies would be impressed upon to extend support in earmarking open fields, sports stadia and community playgrounds for neighbourhood schools in urban areas, as many private schools and even some publicly funded schools do not have playgrounds within school campuses in many cities and towns. Such schools will be encouraged to adopt alternative sports and games activities that support physical development and nurturing of kinaesthetic intelligence."

National Policy for Children 2013(MWCD 2013a, Art 4.6-xvi) states that the State shall take all necessary measures to "Ensure that children's health is regularly monitored through the school health programme and arrangements are made for health and emergency care of children." Importance of yoga education has also been highlighted by UNO. Since 2014, UN has started observing International Yoga Day on 21st June. The Secretary General of UN in his message for first International Day of Yoga observed on 2015 June 21 (UN 2015) stated that "Yoga offers a simple, accessible and inclusive means to promote physical and spiritual health and wellbeing." Physical education teachers are trained in yoga as part of their course work. As this is not the case with general teachers, Mohanty (2016, p. 13) suggested that school teachers need be appropriately trained, if yoga is to be introduced for all. In order to provide education for development of body, should every elementary school have physical education every day including sun days and holidays in the afternoon, after giving Tiffin to every student, as part of School Lunch programme, with support from volunteers from the locality to impart training in physical education?

MHRD (2010 c) authorised the National Council for Teacher Education(NCTE) "as the academic authority to lay down the minimum qualifications for a person to be eligible for appointment as a teacher." It is also a fact that a large number of teachers follow the way they were taught by their own school teachers, instead of following the ideals taught in teacher training institutions (Schwille, Dembele & Schubert 2007). In US, since two decades, certain schools have been authorised to appoint persons of their choice and train them on the job. US: Office of Assessment, Research, and Data Analysis (2012, p. 2) states that:

> "The requirements of alternative certification programs vary widely, but most programs are shorter, less expensive, and more practically oriented than traditional university-based programs. Pre-service preparation typically ranges from four to 12 weeks during the summer before new teachers enter the classroom. The programs usually include coursework in pedagogy and subject area knowledge, practice teaching, and continuing support for teachers once they enter the classroom in the form of mentoring and professional development."

The Open University, UK (2013, p. 11), while mentioning different routes into teaching in England and Wales area of UK, stated about school centred initial teacher training as follows:

> "These are training schemes provided by groups of neighbouring secondary and/or primary schools in England. The group of schools acts in the same way as an ITT institution and programmes lead to QTS and possibly a PGCE. Courses generally last one year and they allow graduates to complete almost all of their training in a school environment. Trainees are required to meet the same standards set for PGCE students."

Both UK and US have school based as well as university based initial teacher training. School based training has been found to be more beneficial than university based teacher training. IIEP (2008, pp.13-14) states that:

> "The greatest benefit of school-based training underlined by participants is the possibility of reducing the gap between what is taught in formal training institutions and the reality inside the schools. School-based training is therefore seen as a way to make the training more practical and reduce the effects of a possible 'culture shock' when beginning teachers are faced with a real teaching environment."

Recently, international bodies have started giving importance on class size as an indicator of quality. OECD (2016b, p. 202) states that

> "Class size can affect learning in various ways. Large classes may limit the time and attention teachers can devote to individual students, rather than to the whole class; they may also be more prone to disturbances from noisy and disruptive students. As a result, teachers might have to adopt different pedagogical styles to compensate, and these, in turn, might affect learning."

As large class size reduces the amount of teacher-taught interaction and forces non poor parents provide private tuition for their children. Should the Act be modified to specify maximum number of students permissible per class/section in a primary school and in an upper primary school?

All developed nations give stress on equity in education, especially at the stage of compulsory education. Gurria (2016, p.4) in Foreword to PISA 2015 Vol.2 stated that "Achieving greater equity in education is not only a social justice imperative, it is also a way to use resources more effectively, increase the supply of skills that fuel economic growth, and promote social cohesion". As per schedule in MLJ (2009, p. 14) the number of teachers to be provided in a primary school will vary as per the number of enrolled students: 1 to 60 students – 2 teachers, between 61-90 students 3 teachers, and 91 to 120 students 4 teachers. As in a given time interval, the curriculum that can be covered by one teacher per class cannot be covered by one teacher covering students of two classes, if the nation is interested in taking

care of equity at the primary school stage, should it modify the existing provision by providing at least one teacher per class of 1 to 30 students? Internationally, in case of academic achievement, generally, students from disadvantaged locations and communities fall behind those from rich locations and communities. Recently, OECD (2017, p. 51) stated that "PISA consistently finds that disadvantaged students perform worse than advantaged students, even if the strength of the relationship varies greatly across countries". Situation is not different in India. Certain nations have started yearlong schools / full day schools for children in deprived locations. In US, there is even a National Association for Year-Round Education. Should such a system be introduced in case schools in difficult locations by providing higher scale of pay to teachers posted in them? In case of schools in developed nations, there is non-detention policy as well as provision for a Remedial Teacher to take care of slow learners. Should not the RTE act (MLJ 2009) be modified to include provision of a remedial teacher in every school having classes VI-VIII? MLJ (2009, p. 12) mentions provision of part time instructors for art, physical education and work education in a school having class VI to VIII and has a student strength above one hundred. Should the act be modified by removing minimum number of children in such a school, as teaching of art, physical education and work education is an integral part of the curriculum?

Even after 14 years after amendment of constitution that made elementary education a fundamental right and seven years after formulation of act to implement free and compulsory elementary education, there is talk about tackling non-school going children. The Act accepts the fact that all children of six years of age will not join school. MLJ (2009, p. 3 – Section 4) states that

> "Where a child above six years of age has not been admitted in any school or though admitted, could not complete his or her elementary education, then, he or she shall be admitted in a class appropriate to his or her age;
>
> Provided that when a child is directly admitted in a class appropriate to his or her age, then, he or she shall, in order to be

> at par with others, have a right to receive special training, in such manner, and within such ti e-limits.as may be prescribed;
>
> Provided further that a child so admitted to elementary education shall be entitled to free education till completion of elementary education even after fourteen years."

MLJ (2009, p. 10 - Section 38) states that the appropriate Government may, by notification, make rules in respect of " the manner of giving special training and the time limit thereof, under first proviso to section 4". MHRD (2013) letter regarding interventional strategies for special training (ST) states that

> " 6. 4. 2 Teachers: Based on the number of children enrolled and the location of ST, decision should be taken on using existing teachers or additional teachers for the ST. In case ST is organized in the school and numbers are not large then the classes for ST can be the responsibility for regular teachers. Additional teachers / educational volunteers will be needed if the number of children enrolled in ST is large or if the ST is located at a placeother than the school or is residential in nature"

There are Block Resource Centres (BRC) and Cluster Resource Centres (CRC). Should it be appropriate to post 5 special training teachers for non-school going children of classes 1-V in each CRC @ one teacher for each class level (I-V) and 5 special training teachers for non-school going children in each BRC, one each for (i) language used as the medium of instruction, (ii) mathematics, (iii) science, (iv) social studies and (v) art, physical education and work education?

Issue of special training will not arise, if the government can stop child worker, child beggar and child engaged in taking care of younger brother or sister at home, in the absence of parents. The Times of India (2017 April 22, p. 6) reporting on child beggars in Chennai stated that "almost every other kid ill-treated to "solicit sympathy for higher earnings." If the MLJ (2009) Act is to be modified, a section might

perhaps be inserted that can make the administration responsible to stop child worker, child beggar and child home care and make it mandatory for States and UTs to have budgetary provision to take care of children without parents and children whose parents cannot take care of them due to poverty or other reasons.

Funding is an important issue. States vary regarding classes taught in a school. For instance, in Odisha state, class VIII is generally part of high schools, which have classes IX and X and classes VI and VII are part of middle schools. Should funds be spent in bringing class VIII material resources from high school to middle school? Should the state spend its funds for shifting of class, instead of spending that amount for giving appropriate salary to teachers and also for appointing teachers?

Quality of elementary education is an important issue. MLJ (2009, p. 4-Section 8(g) mentions that the appropriate government shall "ensure good quality elementary education conforming to the standards and norm specified in the Schedule." The schedule has not been able to specify standards in appropriate format. The Act may be modified to give details of standards and norms. Again, standrads and norms may vary from one State to another and also from one category of schools to another. If the multi grade teaching will have to continue, it may be appropriate to develop quality parameters for each category of primary school, taking into account number of classes/sections taught by a teacher. There is also a need to specify quality parameters for various types of government schools: (a) special schools for handicapped, (b) residential schools for Scheduled Tribe and Scheduled Caste students, (c) Jawahar Navodaya Vidyalayas, (d) Sainik Schools, (e) Kendriya Vidyalayas, etc. as there is much variation in quality of intake in these types of schools.

CONCLUSION

The Constitution (Eighty-sixth) Amendment Act 2002 (MLJ 2002) added clause (k) under article 51 A of the constitution that makes a parent or guardian responsible for providing opportunities for education

to his/ her child or as the case may be ward between the age of six and fourteen years. Poor parents, even if told about such a provision, cannot do much for education of their children. Poverty is the main barrier that deters the process of making free and compulsory elementary educations a reality. In such a situation, goal 4 of sustainable development strategy of UN as reported in UNESCO (2016, p. 20) has the target of providing (a) inclusive and equitable quality education and promote lifelong learning opportunities for all, (b) by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes and (c) by 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education. Can the nation be able to achieve this target within a period of thirteen years?

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NURTURING CREATIVE THINKING

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INTRODUCTION

An agricultural example[1] shows that helping people flourish is an organic and unpredictable process. Like a farmer sowing seeds, someone creates conditions for children to grow as creative and critical thinkers. Creativity cannot be taught 'directly', but educational practice can provide the means, opportunities and a fertile environment for the creative mind to flourish.

We use the term 'creative thinking' in this booklet (rather than 'creativity') because creative thinking: (a) is the prerequisite for *any* creative process, output and outcome; (b) presupposes the active and *intentional* involvement of the person(s) who create(s); (c) can be fostered by *appropriate* education. Creative thinking is defined as the thinking that enables students to apply their imagination to generating ideas, questions and hypotheses, experimenting with alternatives, and to evaluating their own and their peers' ideas, final products and processes.

Everyone has creative thinking skills and ideas, but children have more because they are not yet fully aware of rigid logic and convergent views. They are divergent, open, inventive and playful, which are features of creativity. Adults can also demonstrate their creativity,

though it is suppressed through work and education. In principle, everyone can be(come) creative! Three factors contribute to be(com)ing creative: *skills, environment (including means) and motivation*.

In the following chapters, we consider all these factors in a (creative) learning space and in a school curriculum that enhances creativity. We analyse and emphasize the following three main points:

- all school subjects are creative and can be taught and learnt creatively;
- all environments can create and offer multiple, albeit very different, opportunities for students and teachers to reflect creatively; and
- all teachers, like all people, can be creative in their teaching practices.

The fostering of creative thinking is not always easy, and some advice from research, experience or guidelines from successful practice may be necessary. This booklet presents eight points taken mainly from three sources: (a) research on creativity recommendations; (b) research on classroom practices: (c) the authors' own experiences. We offer simple guidance on school activities that enhance creativity and creative thinking in different school and learning spaces world-wide, as we firmly believe that practice drives research and theory. That is, focusing on improving practice uncovers the best specific ideas. What you learn along the way can be tested in the light of broader research; but practice – not research – should be the driver. With this in mind, the eight chapters of the booklet try to:

- provide evidence on human creativity through good/suitable examples;
- emphasize practical implications; and,
- highlight good practice(s) and recommend activities to nurture

creative thinking.

The booklet contains eight key principles of creative thinking in no particular order of priority and with no hierarchical structure in mind. They are interlinked and interrelated and equally important for nurturing creativity in the educational context.

In order to nurture creative thinking in students effectively, we must re-think schooling and reflect on how new educational futures could be outlined by re-examining the following:

- what students learn (e.g. a diverse range of skills and subject content following their own learning pathways);
- how they learn (e.g. learning approaches and methods such as problem-based learning, constructivism, self-organized learning, instructional design, game-based learning);
- where they learn (e.g. in any location within school buildings–foyers, lounges, common spaces and corridors–home, a youth club, or indeed in the street);
- when they learn (e.g. after formal school hours and at any age);
- who they learn with (e.g. not only with teachers and classmates, but also with a range of other people, such as peers, experts, and people near to or far from them, and by themselves with self-organized learning methods, etc.); and
- for whom and why they learn (e.g. not just for themselves or for future employers, but also for their fellow citizens, society and industry, and for the world as a whole).

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1.CREATIVITY CAN BE PROMOTED THROUGH ALL SCHOOL SUBJECTS

Students' creative thinking can be nurtured in all school subjects and curriculum areas, and especially in cross-curricular activities.

Research findings

Creativity is not only a privilege of the arts or people associated with the arts. Creative thinking can also be fostered and demonstrated in all school subjects and curriculum areas. Even trivial subject-specific content can nurture creativity in students, provided that the pedagogical approach allows for the expression of creative thinking and imagination.

One of the main barriers to creativity in schools is the heavily charged curriculum. We need to rethink the traditional division of school subjects and skills, and design a more flexible, balanced and less-extensive curriculum with a provision for diverse and cross- curricular activities, such as projects, school blogs or magazines. Cross-curricular activities could nurture creative thinking and learning, but they require close collaboration between students and teachers with different backgrounds, knowledge, competencies and expertise.

Application in practice

Even the most detailed and traditional curricula do not tell teachers exactly how to teach, and they do not prevent students from participating in cross-curricular or other types of learning. Therefore, from the creativity perspective, there is still considerable freedom for teachers to decide for themselves what and how they teach creatively. Often original explanations of facts and challenging comments on traditional knowledge by themselves can be creative ways of viewing otherwise non-creative subjects. These and other forms of student participation should be encouraged because they can be eye-openers and could lead to non-conventional ways of thinking.

The following are some ideas for teachers who want to teach creatively in all school subjects:

- *Mathematics:* you can help your students to develop their problem-finding and problem-solving skills, and mathematical competence through creative and authentic activities. For example, students could carry out a survey on the use of personal devices such as mobile telephones, computers or games among the members of the school community and create a report with tables and charts that could be published in the school newspaper or blog. Playing with cards, configuration games such as tangrams and other toys and observing other everyday practices can also be used for creative learning, if these activities are used to engage the students and are integrated into the mathematical exercises.
- *Science:* you can encourage students to experience science not as a set of facts but as a creative endeavour for understanding nature. For example, you can ask students to experiment with paper airplanes and report on the effects that their size, shape and material have on how they fly. Or, you can investigate basic science concepts such as forces by using playground equipment (e.g. seesaws and spring riders) or buoyancy through plastic toys.
- *History:* History can be studied as an exciting adventure that triggers students' imagination and connects the past with the present. For instance, starting from school history (e.g. searching the school archives for information about its foundation, ex- students and teachers, and the development of school premises, etc.), students can study local history and how it reflects specific historical periods. You should use open-ended questions and tasks as far as possible, e.g. 'what information could our school building provide for future historians?'
- *Geography:* Geography can contribute to the development of a range of creative thinking skills through open-ended and meaningful activities. This type of question can elicit creative thinking, raise awareness of global issues and create environmental

consciousness: for example 'How can we show what our locality is like to people from another city or country?',

'What can we do to help protect our local environment?', 'What do maps tell us about life in X place?'

Suggested readings: Fisher & Williams, 2004; Kampylis, Berki, & Saariluoma, 2009; Starko, 2010.

2. INFLUENCE CREATIVE THINKING THROUGH WELL-DESIGNED LEARNING SPACES

The way space is designed has a significant impact on creative thinking and learning. Learning spaces can bring people together and encourage their interaction and creative collaboration.

Research findings

The way in which space – physical or virtual – is designed can deliver unspoken messages about the dominant teaching and learning practices, and also shape and influence the learning that happens in it. It can, furthermore, influence creative thinking.

Sometimes even trivial details – such as furniture arrangements, the materials used and the technologies available – are instrumental in achieving positive learning experiences that can determine students' learning outcomes, while ensuring the well-being of students and teachers.

Inspired by evidence-based research on the impact of lighting, noise, furnishing, ventilation and indoor air quality, as well as by the principles of socio-constructivism, we can (re)design and (re)arrange space to take advantage of colour, light, sound, shapes and materials. Thus, collaboration and co-construction of knowledge is allowed, the possibility of thinking differently is opened up and innovative teaching is facilitated.

Application in practice

Even in a typical school with 'standard classrooms', teachers can work out creative arrangements for a variety of working spaces that encourage the active involvement of students. The

following suggestions could help you achieve this:

- Design with *your* students two or three basic classroom arrangements, e.g. for whole class lessons, for teamwork or project-based activities, and for independent work. These arrangements should demand little time and the minimal moving of furniture. Students themselves can be empowered to make the changes and the transitions. Although these changes can cause momentary chaos, they also allow for creative teaching and learning practices.
- Use 'pigeon hole' units, individual pocket folders, or other communication means that allow you to provide your students with individual assignments, reading materials, comments, etc., without wasting a lot of time passing out papers.
- Experiment with everyday materials in order to transform the classroom into a creative learning place. For instance, try re-using cardboard boxes on a table to re-create carrel desks (small individual high-sided desks), as an alternative way to encourage independent study, when needed.
- Utilize new technologies in an innovative and cost-effective way to transform even the most conventional school buildings into stimulating learning spaces. For instance: (a) use video projectors to create inspiring and easily adaptable physical spaces by projecting powerful images and/or texts onto school walls; (b) 'take the class on a trip' to any location in the world through the Internet; or (c) run experiments through online laboratories[2] without leaving the room. In the absence of new technology, try to use older learning technologies, e.g. geographical wall maps, drawings and images produced by the students, etc. Or you can hold the lesson in several different ways, and afterwards compare and contrast the effectiveness and pleasure in teaching and learning.
- Discover alternative learning spaces to the classroom, either inside (e.g. a corridor, the school garden, etc.) or outside the school

premises (e.g. a youth club, a park, etc.). Then, with one or more colleagues, co-organize a creative, project-based activity, involving mixed-age groups of students. Observe and monitor any differences you see in students' involvement and interaction related to the new learning arrangements.

Suggested readings: Burke, 2007; Oblinger, 2006; Rudd et al., 2006; UNESCO, 2012.

3. INCREASE THE USE OF OPEN-ENDED QUESTIONS

Open-ended questions help students develop creative thinking by applying, analysing, evaluating and synthesizing information and knowledge.

Research findings

Teachers spend a great deal of their time asking students questions. Many different types of questions are used, but the main distinction is between closed questions and open-ended questions. Closed questions can be used to test comprehension and to aid retention of information (e.g. what is the capital city of India?). Open-ended questions have many possible answers that are not pre-determined (e.g. what if we had gills?). Open-ended questions can promote creative thinking and learning because they require students to find, combine and criticize information instead of simply recalling facts. Research shows that on average, approximately 60% of the questions asked in classrooms are closed-ended, 20% are procedural, and only 20% are open-ended.

One of the most ancient and effective questioning frameworks is Socrates' maieutic method, which highlights the importance of questioning in deep and active lifelong learning. Socratic questioning differs from random open-ended questioning in the sense that it is planned, disciplined and deep; the questions are selected to probe reasons and assumptions in order to engage in higher levels of thinking progressively – including analytical, critical and creative thinking.

Application in practice

It is a real challenge for teachers to develop a well-planned questioning method that encourages the active involvement of students and facilitates creative thinking. The following are some suggestions on how you could do this:

- Try novel ways of involving all students in asking and answering questions. For example, ask students to raise one green card when they agree and a red card when they disagree with the answer that someone else has given. Start first with closed-ended questions and go progressively to open-ended, higher-order questions.
- Focus on the actual experiences and thoughts of the students, rather than on what they have read or experienced second hand, by asking:

– Questions that seek clarification: e.g., 'Could you explain further?', 'Can you give an example/counter example of ...?'

– Questions that challenge assumptions: e.g. 'What do you think is behind this assumption here?', and 'Is this always the case?'

– Questions that probe reasons and evidence: e.g. 'Why do you say that?', 'How do we know that ...?', 'Is/are there any reason(s) to doubt this evidence?'

– Questions that explore alternative viewpoints: e.g. 'What is the counter argument for X?', or 'Can/did anyone see X in another way?'

– Questions that look for implications and consequences: e.g. 'But if X happened, what else would could result?', 'How does X affect Z?'

– Questions about the question: e.g. 'Why do you think that I asked that question?', or 'Why was that question/problem important?'

- Simply asking more open-ended questions does not necessarily lead students to produce higher-order responses; so, increase the wait-time for answers as much as possible and create a positive

climate by tolerating ambiguity and encouraging original responses.

- Ask students, whenever you can, to explain how their answer emerged (e.g. based on their prior knowledge or experience; inspired by a similar situation (analogy), etc.).
- Always encourage and treat students' questions with respect and interest; in other words, try to reward and assess not only their answers to your questions but also the questions they formulate/ pose themselves.
- Scrutinize your questioning technique(s) by audio or video-recording a number of your classes or by asking a colleague to observe you. Keep track of the percentage of closed- and open-ended questions you use, the students you question each time and the type of questions you use for each of them, etc. Reflect on the patterns of questioning you are using and check if they promote creative and critical thinking.
- Try to find a better balance between oracy (e.g. dialogues and arguments) and literacy (e.g. written texts and online sources), and use both written and oral examinations for assessing students.

Suggested readings: Cotton, 1989; Fries-Gaither, 2008.

4. ENGAGE LEARNERS IN MEANINGFUL AND AUTHENTIC ACTIVITIES

Learners are most creative when they are involved in meaningful, challenging and authentic activities; these are more likely to generate interest and engagement.

Research findings

Learning and creativity are the outcomes of hard work, determination and persistence. Even when students have the potential to learn and/ or create something, they still need the incentives to do so. Individuals who are intrinsically motivated tend to be more willing to spend the

required time and energy to be creative than the individuals who are driven by external rewards, pressures and inducements. Students are more likely to express their creative potential when they are involved in meaningful and authentic activities that fit their personal interests and abilities, and are also intellectually challenging.

Application in practice

- Find out through conversation, questioning, etc., what arouses the interest and motivates your students, as well as what they already know.
- Use the above-mentioned information for designing meaningful activities and authentic tasks of different types (visual, auditory, kinaesthetic) that motivate all students and increase their engagement. Always take into account gender and individual differences, learning styles, and cultural and socio-economic background.
- Allow students to have personal choices and contribute to decisions that relate to their own learning. Take their suggestions and feedback on the selected activities and tasks seriously.
- Consider students' close friends' interests and hobbies, too! Friends at that age influence each other's learning a lot through their personal preferences and occupations.
- Offer, whenever possible, authentic learning opportunities to students and try also to involve others, e.g. experts, subject specialists, artists, parents, other teachers, etc., in order to stimulate interest and ensure engagement.
- Take advantage of the available open educational resources (such as lesson plans, simulations, quizzes and e-books that can be modified, reused, repurposed and shared) and align them according to the needs, interests and prior knowledge of your students.
- Remember that, in order to advance effective creative thinking in students, the teaching approach is far more important than the content of the activity itself. Even trivial content can activate creative thinking, provided that the pedagogical pursuit allows for idea generation, recreation, experimentation and sensible risk- taking.

- Ask your students to follow a local newspaper or the municipality portal for one or two weeks, until they find real world problems, news and situations that capture their personal interest. Ask them to formulate a problem, connecting it with specific curricular areas. The formulation of a problem is very often a more creative process than its solution; raising new questions and new possibilities, while looking at old questions from a new angle requires pure creative thinking.
- Ask students to investigate these and other problems while working in small groups that they have formed themselves according to their preferences, in order to propose creative solutions, such as a written report, a blog post, a presentation for all, etc. Help them to understand that real-life problems can have multiple and diverse solutions. This can reveal the students' own creative potential!

Suggested readings: Amabile, 1996; Kampylis, 2010; Starko, 2010; Vosniadou, 2001.

5. COLLABORATION ENHANCES CREATIVITY

Motivation, insights and novel ideas arise mainly during our interaction with others.

Research findings

Collaboration develops the students' ability to think both independently and with others, enabling them to consider a wide range of perspectives and, thus, increasing their creativity potential. In this sense, creative thinking is not only a characteristic of individuals but also the property of groups of individuals. Original products are created not only by individuals, but also by groups, organizations, communities and even by entire societies.

Several terms, such as group/team creativity and collaborative/ collective creativity, are used to describe the common efforts of two or more individuals to achieve an innovative outcome that cannot be achieved by a single individual alone. Researchers agree that there are significant differences, but also interrelations between individual and collective creativity. Therefore, in order to explain collective creativity it is not enough to study individual creativity. We must also

consider the role of each individual in a group, the group dynamics, and the socio-cultural and environmental factors, which are nowadays considered far more important than before in creativity pursuits.

Application in practice

Creative teachers can encourage collaboration and facilitate students' collective creativity by:

- Emphasizing the roles of the individual and of the collective (group effort) in creativity. For example, you can ask students to list a number of inventions (in the history of science) and/or discoveries (in history or geography), and ask them to analyse them and determine if they were the outcomes of individual or collective efforts.
- Engaging students in reflections about the role of others, such as peers, teachers and parents, in their own creative achievements.
- Acknowledging that cultural diversity is an opportunity for learning in general and for creativity in particular. Formulating mixed groups of students with diverse backgrounds, interests, prior knowledge, abilities and learning styles ensures the plurality of thinking within the group and the possibilities for collaborative creativity.
- Providing students with as many opportunities as possible to collaborate with peers (virtually and face-to-face) and those beyond the classroom – such as experts and artists – in order to bring creative projects to a successful conclusion.
- Helping students to set up and run their own clubs, such as science clubs, school magazine editorial teams, school blog teams, school bands, theatre groups and dance ensembles in order to give them numerous opportunities to collaborate creatively. Other groups can also be planned and formed to accommodate other interests and activities, focusing on nature, mathematics, computers, literature/poetry reading, writing, broadcasting, etc.
- Understanding that collective creativity raises a range of issues, including peer-to-peer equality. The creative-thinking process must be productive *for all* students and allow them to express their multiple

intelligences and interests. Everyone has the right to creative learning and self-expression, and also the duty to respect the same rights for others.

- Helping students to understand that not all collaboration leads to creativity. Effective collaboration for creativity expression needs to have some element of structure and continuous encouragement and facilitation by suitably trained teachers.

Suggested readings: Miell & Littleton, 2004; Sawyer, 2012; see also Bertolt Brecht's poem *Questions from a Worker Who Reads* (http://bit.ly/12V8QPB)

6. MAKE EFFICIENT USE OF TECHNOLOGIES

Educational technologies enable communication and collaboration, and open up a range of profoundly new ways of using and creating information and knowledge inside and outside the school.

Research findings

Information, communication and collaboration are at the core of the educational process, and the rapidly evolving related technologies and applications (information and communication technologies – ICTs) have influenced, and often transformed, the ways we think, learn, communicate and create knowledge. ICTs encourage creative processes as they allow information to be represented in a variety of modes, which other media and tools cannot offer. They therefore support a diversity of learning styles. Thus, they enable learners to retrieve, evaluate and synthesize information, try out creative ideas, explore alternatives and solve problems in a personalized and active way.

ICTs have great potential for dissolving the boundaries between learning in and outside schools, for re-engaging marginalized learners and for motivating students and teachers. ICTs are used more effectively and creatively in schools when: (a) the students are in 'control' of learning (personalized learning); (b) peer learning and collaboration are facilitated; (c) feedback and assessment are optimized; (d) there is a diversity of

teaching and learning strategies; and (e) teachers are pre- trained in their use as teaching and learning tools.

Nowadays, there is a consensus among researchers and educational stakeholders that the process of using technology to facilitate creativity in thinking and practice is not merely a technical matter. It is, mainly, a matter of adopting innovative pedagogical practices that utilize the existing and emerging technologies in a student-centred context for developing both creative thinking, and twenty-first century skills and competences, such as self- and peer-assessment, problem-finding and problem-solving, inquiry, communication and collaboration.

Application in practice

What can teachers do to take full advantage of the potential of ICTs to encourage creative thinking and twenty-first century skills?

- You can use available ICT tools (e.g. online social networks) for opening up new ways for learners to collaborate, communicate and connect with creative ideas, and people beyond time and school borders.
- You can help students to understand that creative use of ICTs offers opportunities for supporting the democratic decision-making processes and strengthens representative democracy. For instance, you can provide concrete examples that illustrate the power of individual contributions to bring about large-scale changes at the local, regional, national and/or international levels.
- You can use available technologies for 'flipping' teaching[3] and learning routines so that you can spend more time interacting with students instead of lecturing. For example, you can use videos and online resources with the lecture and/or learning materials that students can access and study outside of class time. This flipping allows time during the class to be used more effectively for additional learning-based activities, differentiated instruction and collaborative learning.
- You can take advantage of the educational activities (e.g. virtual tours), programmes (e.g. open online courses), resources (e.g. online videos), and applications (e.g. games) that are offered – usually free of charge – by institutions such as libraries, science centres, museums, zoos,

non-governmental organizations, foundations, universities, corporations and so on, for developing engaging, amusing, meaningful and authentic learning activities inside and outside school.

- You can improve students' ability to transfer the creative and active ways (e.g. trial-and-error and learning-by-doing) they use when interacting with ICT devices and applications (such as games) to other situations inside and outside the school.
- You can use a great variety of digital resources, such as e-books, maps, illustrations, audios, videos, infographics, animations, simulations, games and 3D applications to trigger students' interest and increase their participation.

Suggested readings: Bocconi, Kampylis & Punie, 2012; Cachia et al., 2010; Craft, 2012; Loveless, 2008

7. ALLOW FOR MISTAKES AND SENSIBLE RISK-TAKING

Create a caring and encouraging learning environment where students feel free and safe to experiment with new ideas and take sensible risks.

Research findings

Failure is an 'integral' part of the creative process and creative people often have many failed ideas or products before finding their successful ones. The creative process is inherently risky, and risk-taking is among the key characteristics of a creative personality.

Unfortunately, teachers tend to minimize failure of all types. A recent study on creativity and innovation in education in European Union Member States revealed that schools prefer discipline to playful and risk-taking behaviour. The emphasis on the 'correct response' reinforces students' fears of making mistakes and this is one of the most widespread educational practices that inhibit creativity. As a result, students are not willing to take risks within school. They prefer to 'play it safe' and provide teachers with one 'correct response', instead of trying to explore more ideas and alternatives.

Teachers' willingness to allow their students to take risks, to explore

and experiment is related positively to students' creative learning. In order to foster creativity, schools could try reinforcing a 'culture of tolerance' that encourages 'sensible risk-taking' by teachers and students.

Application in practice

You could try to create a secure and supportive learning environment where students feel safe enough to try new things and are not afraid to make mistakes or fail. The ownership of the activities (and outcomes) should lie with the students, allowing them to make high (strategic) level choices related to non-predetermined options leading to creative and unpredictable rather than predictable outcomes.

When planning in order to encourage creativity, you can consider the following:

•Act as role models for creativity by taking sensible risks, trying new things and adopting innovative teaching practices.

•Allow students the freedom to play with ideas and take sensible risks, while engaging in challenging and controversial issues from real life.

•Allow space and time for students to try new things and learn despite the pressures of assessment.

•Encourage initiatives linked to risk-taking and creative thinking, and take them into account in students' final assessments.

•Give students the opportunity to carry out peer reviews of materials where errors were made in order to help them recognize mistakes and reflect upon them.

•Engage students in problem-based and meaningful activities that allow experimentation, sensible risk-taking and learning through trial and error, discussion, argumentation and debate.

•Recognize, accredit and reward any prior experiential and/or informal learning that happens outside classroom through learning-by-doing and through trial-and-error.

•Provide students with role models of successful risk-taking, tolerance of ambiguity and continuous creative efforts in order to avoid linking a single failure with total failure.

•Ask the students to create a bulletin board, a presentation or an essay of 'Great Failures(?)' in order to understand that failure is an 'integral' part of any creative process and that creative efforts are not always accepted at the time they are initiated.4

•Ask students to reflect on their own past failures and current mistakes while trying new and creative endeavours, and observe the way they reflect and comment on them. Reward this reflection in the final assessment procedure.

Suggested readings: Blair & Mumford, 2007; Cachia et al., 2010; Craft, Cremin & Burnard, 2008; Sternberg & Williams, 1996.

8. LEARN HOW TO ASSESS AND REWARD CREATIVITY

Creative thinking can be evaluated by student-centred and reflective means of assessment which take into account both the learning processes and outcomes.

Research findings

Some assessment methods tend to foster creativity while others tend to inhibit it. Traditional assessment methods that focus on remembering facts do not usually take into account students' creative thinking. Instead, they encourage the avoidance of mistakes and risk-taking, knowing how to achieve the highest grades, and demonstrating one's abilities and skills in relation to others. On the other hand, formative assessment practices provide students with information and feedback on how they are progressing, considering their own prior achievements according to their own learning goals, and are better at fostering creativity than the summative ones. This is because they allow students to understand which skills they need to develop further and which content areas they need to improve. Formative assessment practices include self- assessment, peer feedback, learning diaries, portfolios, e-portfolios and

presentations. In addition, these types of assessment can cover both individual and collaborative efforts, and creative group work, such as projects.

When students feel pressured by evaluative surveillance, monitoring and other major features of assessment, their willingness to take risks and explore creativity becomes limited. But when assessment is constructive and focuses on self-improvement, the students are more likely to take risks, seek out challenges, and develop and contribute ideas that are both novel and useful.

Application in practice

•Explain to your students why it is important to build their assessment on strengths and self-improvement and not on weaknesses and competition. Help them to focus on things they feel proud of; something they can do for the first time; something they feel they have improved at; something that was a challenge for them.

•Co-create with students a checklist or a matrix that will allow them to evaluate their own work (self-assessment) in a creative assignment that examines both the process and the outcome of learning according to several criteria, such as originality, novelty, appropriateness, completeness, elegance and consistency.

•Ask students to test each other (and you!) and give each other constructive feedback (peer-assessment) according to some pre-determined, well-accepted and comprehensible criteria, such as the ones mentioned above.

•Inform parents and other interested groups about the importance of also assessing creative thinking in order to avoid misunderstandings and resistance on their part about changing the traditional assessment practices.

•Encourage students through formative assessment feedback to take sensible risks, express creative thinking and share their ideas or adapt them to a different context (transferability).

•Motivate the students not by suggesting that their creative efforts will

be credited and graded, but by pointing out the features of the task that are interesting to them. Help them to set challenging but realistic goals, both as individuals and as a team, and to find personal meaning in the task by providing a greater level of choice about how to complete it.

•Try to ensure that even summative assessment results are informative and useful. For instance, rather than congratulate the students who got 'A' on a test, as though the 'A' itself was the goal, comment on the high level of competence this grade signifies. Accordingly, help students to *understand that low grades are not a kind of punishment, but an indicator* that the student needs to exert more effort or needs more time or some assistance.

•Reduce the stress and anxiety that very often accompany assessment, particularly during the divergent phases of the creative process when students need freedom and comfort to generate and explore novel ideas. Try to provide constructive feedback – not criticism – at the early stage of idea generation.

Suggested readings:

Beghetto, 2005; Cropley, 2001; Lucas, Claxton & Spencer, 2013; Villalba, 2009. See also a short video related to children's creativity and its 'assessment' at http://bit.ly/16NqRVS.

CONCLUSION

This booklet emphasizes activities and learning tasks that enhance creativity. Opportunities for engaging learners in meaningful, authentic and creative subject activities can be found in *all* school subjects, in new and old learning spaces, and through collaboration and efficient use of educational technologies. Important principles for creative and critical thinking are the use of *open-ended questions*, the *allowance for mistakes* and sensible *risk-taking*. Assessing and rewarding creativity is an important component for appreciating and encouraging creativity.

Creativity is an attitude to change. A flexible and practical mind, willing to play with forms and ideas and turn them upside down in order to achieve a better future, is a creative mind. Creating and enjoying a good life, while

looking for ways to improve it through problem-solving, is a habit of the human mind. The eight principles in this booklet offer a comprehensive guide for creative education. Democratic (all forms) creativity is a remarkable pedagogical innovation, but it is not always possible or desirable. Often, creative thinking for finding and solving problems and the adoption of creative learning paradigms are deliberately avoided. Teachers and students can and should, alone and/or with collaborators, find innovative methods and ideas and carry them out, even within the constraints of their learning spaces.

With or without advanced ICTs, multidisciplinary curricula and imaginative approaches, education at all levels should aim to nurture *manifold (creative, critical, caring and reflective)* thinking. This booklet targets teachers who, as role models of creative thinking, can use pedagogic techniques and cross-curricular activities to trigger the manifold thinking process. It will benefit the human mind and society to get as many wide-ranging thinkers as possible involved in a wide variety of ideas, knowledge and citizenship responsibilities. The main function of school is educating and preparing young people for the future. This future should be personally pleasant and fulfilling, and enable young people to make a meaningful and positive contribution to society. Manifold thinking for creating, communicating, integrating, acting ethically on knowledge and critically evaluating its effects and impact on other humans and the society can offer a holistic educational practice.

One should question: (a) what is the meaning of learning in the modern world? and (b) how can you achieve it creatively? – and why? Learning should lead to wellness of being and 'human flourishing' (*εὐδαιμονία*) , with teachers as mentors of learning and creativity.

Suggested readings: Valtanen et al., 2008.

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NOTES

1.www.ted.com/talks/sir_ken_robinson_bring_on_the_revolution.html

2. Online laboratories are experimental facilities that can be accessed through the Internet, allowing students and teachers to carry out experiments from anywhere at any time. See, for instance, http:// ilabcentral.org/—

3. See, for instance, http://en.wikipedia.org/wiki/Flip_teaching

4. For example, Edison's creative products, such as the ever-lasting light bulb, were not the outcome of single-try endeavours, but rather the result of multiple failures that Edison and his team analysed in a constructive way before achieving success

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GUIDING PRINCIPLES FOR LEARNING IN THE TWENTY FIRST CENTURY

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INTRODUCTION

The purpose of this booklet is to offer guiding principles about learning in the twenty-first century. It is intended for teachers, curriculum designers, school leaders, and others involved in all levels of school education and can be used for any age group, as the principles it contains are general enough to be applied in different contexts. The guide offers a bridge between classroom practice, educational theory, and academic research. It draws on theories developed by researchers and teachers, and on an article of the same title published in *Prospects* (2014), along with the expertise of educational organizations.

Historically, theories of learning, ideas about what we should teach, examples of practice, and suggested models have been developed separately by different organizations. The result has been a lack of unity, with little cumulative knowledge and an absence of cooperation on research. This guide attempts to address this lack of unity by responding to the question: What is it that students should be learning in the twenty-first century?

This challenge takes us back to a fundamental question about the purposes of education: What is education for? The subject areas traditionally taught in school (languages, humanities, natural sciences, mathematics, technology, the arts, religious and physical education) are required by universities and are still relevant. However, there is increasing understanding that new areas of knowledge, competences, and behaviours need to be integrated into curricula if young people are going to function well in an increasingly complex global society.

In the future, they may be faced with enormous challenges associated with poverty, overpopulation, and declining bio-capacity. For example:

- The International Education Advisory Board suggests that twenty-first century learning is and will continue to be linked to information technology;
- The Centre for Curriculum Redesign points to the need for a thorough review of the knowledge, skills, and character necessary for deep and relevant learning;
- The OECD's Programme for International Student Assessment (PISA) has identified the "need to assess problem-solving abilities as governments around the world seek to equip young people with the skills they need for life and employment" (Schleicher, 2011);
- UNESCO has stated that "concern for peace and sustainable development should be at the centre of our efforts to promote inclusive and equitable societal development" (UNESCO, 2013, p. 1).

What is clear is that learning in the twenty-first century involves numerous areas of human development. They go beyond skills and technology to cover all aspects of the social, psychological, and moral development of learners. Educational programmes are often expected to include sustainable development, learning to live together, intercultural understanding, communication skills, and the respectful attitudes towards others needed for genuinely inclusive and peaceful development. Due to this evolution, education may benefit from understanding how to go beyond traditional academic content.

This guide offers ten areas for learning that are particularly significant in the present world's educational climate, in which stability, predictability, and continuity are no longer guaranteed. On the contrary, young people are entering a volatile, unpredictable, complex, and ambiguous world. These ten areas can be divided into:

- Core areas of knowledge (such as information literacy, concepts-focus learning, and STEM [science, technology, engineering and mathematics] learning) [sections 2, 5, and 6];
- Competences (such as critical thinking and creativity) [sections 3

and 4];
- Attitudes (associated with academic honesty, health and mindfulness, and service learning) [sections 1, 7 and 8];
- Broad approaches to learning (in areas such as learning support and assessment) [sections 9 and 10].

It is intended to stimulate meaningful reflection on education so that those who read it feel inspired to take up some of the suggestions and adapt them to the realities of their own classrooms. Although the use of these ideas will vary depending on the context, the underlying message will be the same: these guiding principles are essential for quality learning in the twenty-first century.

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Suggested Readings: Acedo & Hughes, 2014; Coffield et al., 2004; Fadel, 2011; IAEB, 2013; Schleicher, 2011; UNESCO, 2013.

1. ACADEMIC HONESTY

Understanding and promoting values of academic honesty enables students to conduct independent research with confidence and integrity.

Research findings

A quality education in the twenty-first century needs to address the affective disposition and ethical decision-making capacity of learners. This includes their attitudes towards themselves, the community, and learning itself. The survival of the planet depends as much on ethics as it does on competences. A value-based education is particularly necessary in an age when ethical dilemmas are often either reduced to legal, technical questions in a secularised model — which runs the

risk of sterilizing them — or radicalized through religious fundamentalist models where dogmatic moral absolutism is often cast over rational and empirical thought. The challenge facing schools in the modern era is to teach ethics without straying too far on either side of this spectrum.

Carrying out independent research is a core element of learning. When considering academic integrity in the twenty-first century world, it is important to take into account the opportunities and dangers that new technologies represent. Students are being taught to conduct research more efficiently by using databases and software functions rather than mere commercial search engines, while schools are revisiting the concepts of collusion and malpractice in the light of social media and the worldwide web. This is particularly salient in a digitised world, given that the concepts of plagiarism and intellectual property have been blurred by easy access to open source material, and few people really understand copyright infringement.

These concerns regarding academic integrity are relevant not only in schools that use technology in the classroom but ain those where hardware or Internet access is scarce: students need to know how to deal with information ethically and safely, as these are issues they will face throughout their lives. It is important that students are given the technical means, understanding of the concepts, and the ethical foundations with which to conduct research with confidence and academic honesty.

Implications for educators

1. ***Foster a deep understanding of academic honesty***. It is recommended that all students, teachers, and parents understand the concepts of "plagiarism", "collusion", "malpractice", and "intellectual property". These concepts can be repeated from the first years of schooling up until the final examinations in an appropriate manner according to the age of the students. It is important that schools communicate these concepts to students in suitable ways, ensuring that there is a constant, open dialogue on academic honesty. Formative assessment, making learning visible, and reflection on the learning process reinforce academic honesty.

2. Design creative tasks to enhance academic honesty. The best way of avoiding academic dishonesty is to design tasks that require original and not reproductive thinking. Open-ended, creative tasks and learning experiences based on authentic, individual contexts will put students in situations where malpractice, collusion, and plagiarism are less likely to occur.

3. Require clear referencing. It is recommended that every school have clear guidelines on the way it requires students to cite the references they have used for their research. It is often the case that schools appoint curriculum coordinators who are responsible for the choices that students make about their research and the degree of consistency and clarity students receive on the matter.

4. Promote team work at the school level. The librarian in each school can work with teachers and coordinators to ensure that students' use of electronic and manual resources is ethical, informed, up-to-date, and productive. Schools can also use plagiarism-detecting software to screen students' work as appropriate. In cases where students are found guilty of academic dishonesty, it is important for the teacher involved in the incident and the relevant academic programme coordinator to meet with the student and the student's parents to discuss the issue and to ensure clear understanding of all aspects of the case.

Suggested readings*:* Bertram Gallant, 2011.

2. INFORMATION LITERACY

Effective inquiry-based learning requires students who can utilize today's constant flow of information both confidently and fluently.

Research findings

Effective inquiry-based learning is a key twenty-first century competence, as it means detecting signals (important, salient information) from the surrounding noise in an age where the amount

of data generated online is several quadrillions of bytes per day. One of the earliest theories of learning stated that learning should be relevant and situated within a meaningful, real-world context. This is based on the idea that we learn best when we can see the usefulness of what we learn and can connect it to the real world.

Today we know that the human mind thrives in highly complex polyvalent environments, implying that learners can cope with more than we previously thought they could. We also know now from extensive meta-analyses that teachers have the most important impact on learning and that pedagogical quality is a vital part of educational quality. In particular, research indicates that students can develop synthesising minds through well-designed courses in which they learn information literacy as a regular feature of each year's curriculum. It is therefore important for curricula to emphasize and assess rigorous, creative, and critical use of source material, starting at an early age, with and through increased collaboration between classroom teachers, librarians, and coordinators of technology for learning.

Another important element of information literacy is digital citizenship, which involves students being aware of the implications of activity on social media (the repercussions of the digital footprint they leave behind, and appropriate and ethical use of the internet) and open-minded about the opportunities information technology offers for problem solving and creative thinking (connected social networks, sharing of ideas, synchronous and asynchronous communication). Across curricula, students can be stimulated to consider issues related to the media at age-appropriate levels. They can then develop a critical view on the role it plays in group perceptions of reality, the global economic market, and social norms. This is vital for critical thinking in the twenty-first century, as the media plays such a large role in forming public opinion.

We must remember that, even if classrooms and schools have little or no Internet access, they are still preparing students for an interconnected world where social media plays an important role. Therefore, learning experiences can make students aware of these

issues whether or not technology is used in school.

Implications for educators

1. Support the ethical, effective, and efficient use of information.

Learning experiences at all year levels allow individuals and groups to search for and use information for the creation of original materials, decision-making, and problem-solving. It is important to encourage students to seek information from many different sources, disciplines and cultures. This will contribute to good scholarship, a comparative understanding of different subjects in the curriculum, global awareness, and the best possible work.

2. Give students opportunities to develop the skills and attitudes necessary in the use of new technologies.

Information literacy will allow students to increase their use of technology and to develop the skills of analysis, discernment, synthesis, creativity, investigation, collaboration, communication, organization, critical evaluation of sources, and reflection. Schools can enable information literacy by introducing students to recent and new technologies and by demonstrating how to use them intelligently. A key part of this process is educating students in rigorous, creative, and critical use of source material.

3. Consider ethics, legality, and safety when teaching information literacy.

It is likely that students will learn about the concept of digital citizenship at each year level. Digital citizenship defines the way a person "participates in society online". (Mossberger, 2009, p. 173). It is important to ensure that the guiding principles of academic honesty are an important part of information literacy. This also requires standard language and research frameworks for use with teachers, parents, and students. Finally, making available long-term workshops/courses for parents and teachers on subjects such as information literacy and digital citizenship can ensure consistency for students both inside and out of the classroom.

4. Foster meaningful, independent, inquiry-based learning. Incorporating project-based learning as a regular feature of the curriculum at each year level allows students to learn through

experiential adaptation to the world. Schools should refer to design and/or inquiry cycles, and should be clear when they refer to them in order to support students' information literacy consistently and coherently.

5. Ensure carefully planned collaboration among all stakeholders.

A clearly defined information literacy programme requires a set of criteria showing what would be understood as success when judging the effectiveness of the programme and the roles of all stakeholders involved. This involves appropriate interaction and joint planning and teachings among librarians, technology-for- learning coordinators, teachers, and administrators.

Suggested readings*:* Gardner, 2007; Halpern, 1999; Hattie, 1999; Herman & Chomsky, 1988; Kolb, 2000; Mossberger, 2009; Ohler, 2011; Silver, 2012; Wiliam, 2011.

3. CRITICAL THINKING

Critical thinking is essential for students to become autonomous, independents and open-minded individuals.

Research Findings

Critical thinking is a popular, sometimes overused, term that in reality describes, quite simply, the principles of "good" or "clear" thinking. "Good thinking" is the ability to judge arguments or points of view with intelligence and to not be influenced by ideology, fundamentalism, indoctrination, prejudice, or unverified beliefs. Critical thinking allows students to think for themselves. This approach can be recognized in the following actions and attitudes, which are by no means exhaustive:

- Examining sweeping generalizations in detail and avoiding over-simplifications;
- Clarifying issues, conclusions, and beliefs;
- Clarifying and analysing the actual meaning of words or phrases;
- Developing criteria for evaluation: clarifying values and standards;

- Evaluating the credibility of sources of information;
- Listening critically to what the speaker is actually saying;
- Thinking precisely about thinking: using critical vocabulary (Paul & Elder, 2006).

Critical thinking is not merely rational thinking; it involves propositional (or declarative) knowledge ("knowing that"), procedural knowledge ("knowing how") and dispositional knowledge ("knowing to"). This involves a respectful, open-minded approach, "intellectual humility and suspending judgment [...], good faith [and] integrity" (Paul, 1990, p. 56). To stimulate critical thinking in its fullest forms, teachers should be aware of these attitudes and attempt to foster them in students.

The way students ask questions is important in their becoming critical thinkers. Questions, notably open-ended ones that require students to justify and provide evidence for their positions, can be a useful tool to stimulate critical thinking ("Can you go through that step by step?", "Can you explain why that works?"). Critical thinking is also stimulated when students are encouraged to formulate and develop good questions of their own. Finally, questioning for critical thinking goes further than simply asking questions: it implies rigorous follow-through using, among other appropriate strategies, the Socratic method-based on discussion between individuals asking and answering questions to clarify ideas.

It is the quality of the critical thinking itself that is the learning objective. This quality depends in part on the level of relevant knowledge that will be used to support it. There can be little meaningful critical thinking if it is not related explicitly to an understanding of different types of reason in different bodies of knowledge. Critical thinking should be developed in all domains and considered in a whole range of contexts (mathematics, literature, social life, creative thinking).

Finally, critical thinking, like creative thinking, requires an open- minded approach from the teacher. Students are more likely to develop critical thinking skills when they feel free to take risks, are corrected without feeling criticized, and when they challenge, are challenged, and discuss

different opinions. Classrooms that promote wide-ranging discussion among students so that arguments both in favour of and against ideas can be examined in detail create supportive environments for students to express themselves without fear of judgement.

Implications for Educators

Children can be taught to think critically from a young age, but in an age-appropriate manner. It is recommended that each school have a unique, logical sequence of learning objectives that students can discover related to critical thinking within the curriculum.

1. Nurture inquisitiveness. It is important to appreciate and develop the observations young people make of the world and their natural capacity for critical thought when and where possible. Students should be encouraged to reflect critically on different types of knowledge, not only in academic domains but in terms of broader personal and shared experiences. In addition, students can be shown how to appreciate what makes a good question (challenging deeper thought, seeking justification, eliciting abstractions and generalizations from particulars and examples) and how different types of questions can be used to elicit different responses (clarification, probing assumptions, probing reason and evidence, viewpoints or perspectives, probing implications and consequences, questions about questions).

2. Model sceptical thought. Teachers can demonstrate healthy scepticism when dealing with unproven information. This does not mean dismissing claims of unconfirmed knowledge on principle, but being prepared to investigate claims thoughtfully and methodically. This is especially important in today's world where the media plays a crucial role in forming public opinion. Young people need to learn how to be sceptical when approaching knowledge that purports to be true.

3. Encourage international-mindedness. Since critical thinking involves open-mindedness, good listening skills, and the ability to look at different points of view, it can lead to a rich appreciation of cultural, national and historical diversity in human thought. Therefore, it is important for students to be encouraged to explore and appreciate

diverse scholarly traditions, including major differences and similarities between "Western and non-Western intellectual cultures". Schools can ensure that the elements of critical thinking are also evident when students are taught about service learning, self- and peer-assessments, and portfolios.

Suggested readings: Paul, 1990; Paul & Elder, 2006; Ryle, 1971; Siegel, 1985; Singh & Qi, 2013; Swan & Pead, 2008.

4. CREATIVITY

Students use creativity to rethink situations from new perspectives, to see approaches that are not apparent.

Research Findings

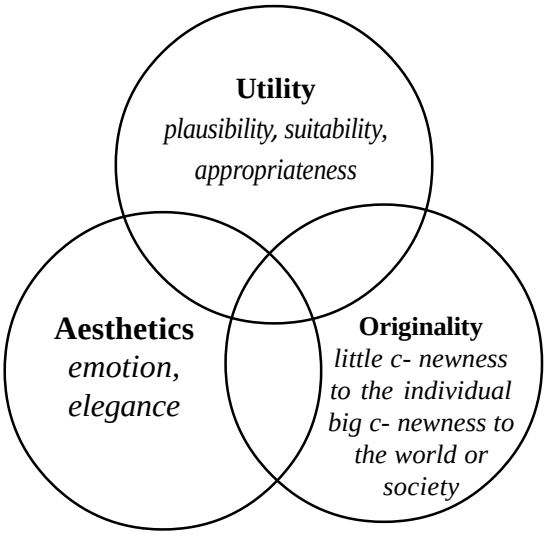
There are many definitions of creativity, but they have in common these essential elements

The creative thinker will see hidden patterns, reconceptualise the fundaments of a state of affairs, step back and see the big picture, and entertain ideas that have not been thought of before. The creative process is seen as controlled and automatic, conscious and unconscious. It can be viewed through the following steps:

- Preparation (detecting a problem and gathering data);
- Incubation (stepping away from the problem for a period of time);
- Illumination (a new idea or solution emerges, often unexpectedly);
- Verification (the new idea or solution is examined or tested).

Imagination plays an essential role in developing abstract thought. Play and joy in the flow of creative thinking are essential; teachers should not be afraid to let students play with ideas. However, it is necessary to note that there is a distinction between creative teaching, where there is a focus on planning and teaching procedures, and teaching for creative thinking where the emphasis is on developing the learner's creative thinking skills. While both are important and

the latter may be developed by the former, the teacher's basic goal is to stimulate creative thinking in the student's mind.



It is also useful to remember that problem-solving is an important component of creativity and includes the following processes: ask a question; notice; identify a need or opportunity; come up with alternatives; select from options; collect data; test options; verify solutions; apply ideas; and evaluate outcomes. Questions that stimulate responses requiring higher order cognitive functions can encourage creativity, such as the evaluation and/or synthesis of information, application of ideas in new circumstances, or the creation of alternative outcomes. "What if?" and "Why?" questions tend to stimulate creative and critical thinking, especially if followed by questions that probe and encourage the learner to go further.

The creative process should be respected as one that depends on perseverance, rigour, lengthy periods of hard work, and purpose. For creativity to have an impact, the process should be carried through to the end.

Assessment of creativity is challenging and controversial. However, large-scale research has identified some core behaviours that are typical of creative thinking:

- Questioning and challenging;
- Making connections and seeing relationships;
- Envisaging what might be;
- Exploring ideas and keeping options open;
- Reflecting critically on ideas, actions, and outcomes.

These are best evaluated formatively, particularly through self-evaluation, peer-evaluation, and portfolio assessments. Given the characteristics of creative thinking, it is important for assessments to be multi-dimensional.

For more information on critical thinking, please refer to the Educational Practices Series Issue #25, *Nurturing creative thinking.*

Implications for Educators

1. Encourage creativity in all disciplines. Creativity is a life skill and approach that does not belong exclusively to the arts. It can be fostered in all disciplines, and across all physical, intellectual, social and emotional areas. Whenever possible, play can be used to extend the range of opportunities to think. This also means having students take time to review their learning from multiple perspectives.

2. Demonstrate creative thinking. It is recommended that both teachers and students be encouraged to demonstrate their creative thinking to help others recognize and appreciate what is involved. Teachers can attempt to create a class atmosphere or other spaces within school that are likely to stimulate creativity. It is also helpful for teachers to remain aware of the types of resources and teaching strategies/tasks that demand rigorous creative thinking on the part of the students.

3. Foster preparatory knowledge and skills. Deep creative thinking can be fostered only if preparatory knowledge and skills have been developed. It is important for educators to make certain that prior understanding has taken place to ensure that creative thinking is meaningful. Subject knowledge should be at an adequate level so that creativity is a genuine extension of learning and not a superficial event.

4. Ensure ideas are actualized. Creativity is not just about thinking, but what you do with your creative thoughts. Teachers can encourage students to carefully select the ideas they decide to pursue further and use analytical skills to judge the value and impact of their proposed actions. This will allow students to play a leading role in their own learning. Students need to plan for a future that is likely to develop at an accelerating rate and where creativity will be as important as sustainability for the survival of the human species.

Suggested readings: Csikszentmihalyi, 1996; Fillis & McAuley, 2000; Fredericks, 1991; Kampylis & Berki, 2014; Kazemi, 1998; Koestler, 1964; Lindström, 2006; Newton, 1996; QCA, 2004; Spencer, Lucas & Claxton, 2012; Sternberg, 1996; Torrance, 1970; Treffinger et al.,2002; Zabelina & Robinson, 2010.

5. STEM LEARNING

The teaching and learning of science, technology, engineering and mathematics benefit from an integrated approach.

Research findings

STEM learning is learning in science, technology, engineering and mathematics: it suggests an integrated approach to these domains whereby science and mathematics are learnt through interdisciplinary projects that use technology and the principles of engineering. Many of the world's most pressing problems are so complex that they cannot be solved from one epistemological framework: they require an interdisciplinary approach that draws from different fields. Although interdisciplinary learning should not be restricted to these areas, STEM provides particularly useful opportunities for meaningful, innovative practices that reflect the increasingly integrated nature of real-world scientific research.

Integrated humanities and sciences courses tend to be offered in primary and middle schools, though some argue that they would be better positioned at the latter stages of formal schooling when students

have enough subject-specific knowledge and can think rigorously enough to engage in authentic interdisciplinary work. This work involves complex problem-solving with an emphasis on ethical issues in the sciences (bioethics, scientific rigour in the name of 'good science' despite economic and social pressure, genuine group work and peer review).

Reasoning and problem solving, which lie at the heart of mathematics, have a core role to play in learning science and technology. The twenty-first century approach can benefit from taking problems embedded in real-life scenarios, notably in engineering, and placing them at the centre of the learning of science, mathematics and technology. Furthermore, students participating in STEM learning may work best in groups where they can co-construct knowledge through dialogue, discussion and sharing, provided that these groups are given clear instructions on how to work together.

Implications for Educators

1. Prioritize an interdisciplinary approach to STEM learning. It is important to set aside sufficient time for teachers to collaborate on planning, timetabling, professional development and partnerships that would allow STEM learning to be carried out through interdisciplinary projects. These projects can be aimed at learning objectives and should prepare students for formal assessments through the most exciting and concrete methods available and possible. For effective transfer of knowledge across disciplines, learning needs to be based on concepts rather than topics. Where necessary, consider condensing the timetable into a shorter period of time at the appropriate year level so that space can be found for interdisciplinary projects.

2. Enable innovative, creative and authentic STEM learning. Students can benefit from the opportunity to work on real-world problems and to communicate with experts outside the school. Schools are encouraged to use expertise found among parents to enhance the understanding of mathematical, technological and scientific real-

world dynamics. This also means ensuring that STEM learning projects are inspired by good questions. The study of science and mathematics should be associated, where appropriate, with technology. In addition, it is important for educators to be careful to maintain a gender balance in STEM learning by actively encouraging girls to participate in these subjects as much as boys.

3. Emphasize the essentials of STEM history. The socio-economic, historical and cultural background of STEM subjects should be explored by students. It is important for students to have an opportunity to understand science, mathematics and technology as constructs that have developed over time with specific values and assumptions. Analysis of case studies across various domains and in different historical periods could be one approach. Similarly, teachers can encourage students to question the usefulness of their STEM learning and to probe its relevance.

4. Display STEM projects both inside and outside of school. Interdisciplinary projects allow for taking learning out of the classroom and into the community to connect students with industry and the world of work, where they can benefit from external contact, feedback and real-world situations. Teachers can ensure that STEM projects are displayed around the school, as well as take advantage of opportunities to publicize projects through partnerships with universities and other external organizations.

5. Strengthen students' abilities to transfer knowledge and skills to new situations. Core STEM skills include magnitude estimation, conjecture, hypothesizing, prediction and generalization before experimentation, and creative problem- setting and -solving. STEM skills can be used to give students confidence to approach the world with curiosity, sound thinking and the ability to approach unknown circumstances with an array of critical-thinking strategies, including a thorough understanding of scientific processes. Teachers may also encourage students to ask critical questions to clarify problems and to make responsible decisions.

Suggested readings: Buchanan, 1992; Mercer, Dawes, Wegerif & Sams, 2004.

6. CONCEPT-FOCUSED LEARNING

Organizing information in conceptual structures is fundamental for learning.

Research findings

One of the most important aspects of learning is the way that we organize information so that it can be understood and retrieved. Learning is most effective when it is articulated around concepts rather than topics. Concepts are mental categories that allow us to identify and classify objects, events or ideas, building on the notion that they are similar in significant ways and/or have certain common, relevant features. Studies indicate that concepts-focused learning creates deeper understanding because it is based on cognitive structures.

Learning for understanding takes place when it is categorized in higher-order conceptual structures: this means that the learner identifies the basic characteristics of something that allow it to be generalized to a higher, more abstract level. It is by identifying the basic characteristics of a piece of information that the learner will be able to master an understanding of what defines it and, therefore, what its purpose and meaning are. Research indicates that given the exponential growth of information today, we need to rise to a higher level of abstraction to create schema for organizing and patterning information and to facilitate the transfer of learning through time, across cultures, and across situations.

An essential question for all teachers and students is why they learn what they do. A question like this will force the learner to reflect beyond the immediate surface of the learning experience. If knowledge is not taken to a higher level of abstraction, then it is not possible to recognize and appreciate its significance and basic characteristics. Learners will be faced with disparate elements that

are not unified by any obvious principles or laws. However, when the teacher and student look at learning experiences conceptually, their perspectives shift, from disassociated pieces of knowledge to a group of broad categories that share common features.

A conceptual framework is an analytical tool with several variations and contexts. It is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply. These organizational structures make learning more efficient, relevant and meaningful. Some examples of the broad concepts that can be used to organize knowledge include: conflict, complexity, beliefs/values, paradox, interdependence, interactions, freedom, transformations, force, identity, patterns, relationships, origins, change, perspective, reform, heroes, power, influence, system, balance, structure/function, innovation, design, genius, aesthetics and creativity.

Finally, conceptual frameworks are necessary for students to be able to transfer knowledge to different contexts; it is through a broad concept that students will transfer lessons learnt in one area to another. One of the essential aims of education is to make clear the elements of knowledge through a structure that will allow for deep understanding, transfer and application. Reflecting on concepts rather than topics allows for an interdisciplinary transfer of learning: we can apply the principles of literary analysis to the appreciation of art, or the tenets of scientific experimentation to the social sciences, and so on.

Implications for Educators

1. Encourage conceptual understanding.

Conceptual understanding means actively building new knowledge from knowledge previously acquired through experience or instruction. Teachers can encourage conceptual understanding by taking their students through the process of ordering information. This includes going from (1) factual knowledge (separate pieces of information) to (2) topics (groupings of pieces of information); to (3)

conceptual structures (ideas within and across topics that identify the common characteristics linking pieces of information to one another); to (4) principle generalizations (laws); and, finally, (5) theory, where broad statements can be made about the body of knowledge in question. It is through this rigorous process that students will be able to master understanding of individual elements and how they fit into an overall system.

2. Enable efficient learning.

It is recommended that students learn to place the knowledge to which they are exposed into categories of conceptual frameworks that will serve as "lenses", in order to make learning more efficient. In addition, by encouraging students to bring their intellect to the topic of study through concepts, they are more engaged with the learning process than they would be through a purely factual approach.

3. Create collaborative curriculum to ensure progress.

Equally important, is for teachers to recognize "Threshold" concepts in the curriculum and within a student's learning progression. "A threshold concept represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress. As a consequence of comprehending a threshold concept there may thus be a transformed internal view of subject matter, subject landscape, or even world view, and the student can move on" (Land et al., 2005, p. 53). Teaching and learning, as well as collaborative curriculum design, can take threshold concepts into account and examine ways of basing instruction around these significant, troublesome areas of knowledge acquisition. Collaborative curriculum also allows for deeper, concepts-focused interdisciplinary learning, which involves investigating a single concept through the disciplinary lens of two or more areas of knowledge for deeper understanding.

4. Align concepts with learning objectives and assessments. Finally, it is important for educators to create assessments with diagnostic, formative or summative purposes to give students

opportunities to show their conceptual understanding of the domain in question. This can be done in numerous ways and has implications for task design. Learning objectives within the curriculum should not communicate specific elements of knowledge and skills development alone, but rather incorporate these facets of learning into broad concepts so that teaching and learning is directed at such understanding.

Suggested Readings: Erickson, 2007; Erickson, 2013; Land et al., 2005; Smith & Medin, 1981.

7. HEALTH AND MINDFULNESS

Encouraging students to be physically, mentally and socially alert enables them to be ready to adopt new solutions for new experiences.

Research Findings

One of the results of high-stakes assessments in schools is the pressure it places on students and teachers, often leading to too much stress, and, in extreme cases, mental breakdown. Integrating health and mindfulness into education is therefore essential, and goes beyond the classroom to involve the ethos of the entire educational system. The aim is to increase the mental and physical well-being of students in preparation for the long lives they can expect to lead. The education provided should include a range of opportunities to learn, to grow, to succeed and "to develop to their fullest the powers of each individual to understand, to modify and to enjoy his or her environment, both inner and outer, in its physical, social, moral, aesthetic and spiritual aspects" (Peterson, 1987).

Mindfulness can be defined as "the awareness that emerges through paying attention, on purpose, in the present moment, and non-judgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145); it is "openness to novelty, alertness to distinction, sensitivity to different contexts, awareness of multiple perspectives, and orientation in the present, paying attention to the

immediate situation" (Sternberg, 2000). Educational offerings ideally take students away from mindlessness, which entails an "overreliance on categories and distinctions drawn in the past and in which the individual is context-dependent and, as such, is oblivious to novel (or simply alternative) aspects of the situation" (Langer, 1992, p. 289).

Integrating health and mindfulness goes beyond physical well- being and entails a holistic state whereby thoughts, actions and impressions are interrelated. In a world with an enormous amount of information noise, hyperactivity, competition, and in many regards, a coarsening of society, a twenty-first century curriculum must allow students opportunities to distil their thoughts. In doing so, students will develop ways to bring their mind and body together in an attitude of oneness in which they can focus their thoughts on the environment, *self and others*.

Implications for Educators

1. Encourage mindfulness as a way to maintain health and well- being.

Members of the school community can work together to create environments that allow learners to reflect meaningfully on their interactions with the outside world and their inner sense of being. In this way students will be able to appreciate what is going on around them and their own sense of purpose. By enhancing intrapersonal, interpersonal and environmental awareness, students will be enabled to take more thoughtful decisions about their lives.

2. Empower students to learn more effectively and to think more clearly.

Students, like staff, can be encouraged to clarify their thoughts and learning strategies through "reflective and metacognitive thinking, self-regulation, decision-making, and problem solving, as well as disciplinary forms of thinking" (Ritchhart & Perkins, 2005, p. 777).This is a broad, ongoing goal that is dependent on the quality of teaching and learning, assessment and curriculum design. A mindful

approach will encourage students and teachers to identify items of thought with a sense of presence, so that learning is not an unidentified, automatic process, but rather a recognized pathway that pursues clear objectives and requires a mentally alert state.

3. Encourage awareness of self, others and context.

It is important for the daily life of the school to be based on a holistic approach to teaching and learning. Students should be made aware of the significance of participating in the life of their community and what it means to be part of multiple communities (school, home, local, global). Schools can aim to help all learners to be aware of values and beliefs and to care about them, but also at times to question and challenge them. A simple message to all learners is: "be brave, be aware and be respectful".

4. Provide space and time for reflection for individuals to realise, develop and understand their potential.

When given time to examine themselves in their environment, students are able to reflect on their choices. The route to mindfulness is an individual one and the time necessary should be found to create the conditions for this to happen. Physical space may be a consideration so that students are provided with opportunities to find silence, peace and calm to enhance their presence of mind. This can also be done by encouraging teachers to use silence as a medium for mindfulness through set procedures, such as occasional one-minute silences, periods where there is no talking, and moments where there is in-depth reflection on a single thought for an extended period.

5. Foster intercultural diversity, at all levels of communication.

An internationally-minded school is a place where a multitude of different approaches come together. Members of such a community need to make a serious, conscious and on-going effort to put their own worldviews into perspective and to remain sensitive to other people's needs, beliefs, positions and cultural frameworks. It may also be useful to designate a specific person or group to monitor the place and meaning of health and mindfulness at each level of the school

community.

6. Develop and sustain a Health Promotion Project.

It is recommended that all schools aim to improve the quality of teaching and learning in the school through the broad concept of a healthy school-one that values the growth of social and human capital, and the active promotion of a healthy life for all those living and working in the school. This broad concept of health is defined in the Ottawa Charter for Health Promotion (WHO, 1986) as building healthy public policy, creating supportive environments, strengthening community actions, developing personal skills and reorienting health services. Steps can be taken to ensure that the promotion of health happens at all levels of the school community (structural organization, teaching and learning, academic programmes, teamwork, and partnerships with the local community). Finally, schools may consider professional development in health and mindfulness through programmes, pedagogical days and workshops.

Suggested readings: ISG, 2012; Kabat-Zinn, 2003; Langer, 1992; Peterson, 1987; Ritchhart & Perkins, 2005; Sternberg, 2000; WHO, 1946; WHO, 1986.

8. SERVICE LEARNING

Participating in service learning enables students' personal growth and allows them to contribute to society.

Research Findings

Service learning is education taking place through voluntary work and community projects. It highlights the rights and responsibilities needed to live together in a better world. This is a vital part of experiential learning in that concept-formation follows from concrete experience.

In the twenty-first century, it is vital that schools recognize the place that service learning has to play in the sustainability and

regeneration of society. It is a way to develop notions of reciprocity, meaningful action and purposeful engagement between the individual and the local community so as to make the world a better place. Service learning is at the heart of what it means to be human. The fundamental goal of service learning is to empower students to take an active part in an education that develops a profound sense of humanity. This implies values such as humility, empathy and open-mindedness, and personal conduct such as commitment and initiative that are mediated by critical, creative, alert and reflective thinking.

Service learning is also a cornerstone of citizenship education in that it explores "the duties and rights of citizens at local, national and global levels" and "the nature of personal and civic identity" (ISG, 2009). Schools have a crucial role to play as community leaders through the cultural activities they organise, the partnerships they establish with local authorities and the way they work with their parent bodies to make an impact around them.

Studies indicate that service learning leads to the development of the whole child: it takes him or her beyond academic learning into applied knowledge and personal conduct. This enrichment of the educational experience can lead to wisdom. Wisdom is not just about maximizing one's own or someone else's self-interest, but about balancing various self-interests (intrapersonal) with the interests of others (interpersonal) and of other aspects of the context in which one lives (extrapersonal), such as one's city, country or environment.

Implications for ducators

It is recommended that service learning be recognized as an essential part of education. It is important for students to become directly involved in service projects so as to internalize the values of the school and carry them out in real-life situations.

1. Ensure service learning meets a genuine need.

Before engaging in voluntary work, students can be encouraged to

find out about the needs for voluntary work at different levels within the community. It is through research, communication with the person or group served and direct experience that students will learn what it means to participate in a community. Developing an understanding of the community and its different needs will make subsequent service work more valuable.

2. Plan critically and respectfully. Actions and interactions in the context of voluntary service activity have consequences of which students need to be aware. It is important for service activities to be planned critically and respectfully, in conjunction with the person or group served. Showing empathy and respect for the person or group served is also imperative. It is important to avoid patronizing or "messianic" approaches in service. When students see themselves as learners first, they are better able to understand that people from different cultural and socio-economic backgrounds will also have something to teach them.

3. Make long-term commitments. Whenever possible, projects developed by and/or with students need to take place over a lengthy period of time. Even though students may be involved in short-term support during emergencies, such as natural disasters or accidents, it is preferable that they plan their service projects with long-term involvement and impact in mind. Commitment to a project is more likely to develop if students have carried out careful planning, SWOT (Strengths, Weaknesses, Opportunities, and Threats) analyses and face-to-face discussions with the person or group served.

4. Enable personal growth. Students have different levels of understanding and involvement in service. It is important for this to be taken into account when proposing a service-learning programme. Giving students constructive and precise feedback during and after these activities is an essential way of developing the quality of service learning.

5. Follow a cycle of inquiry.

While there are different inquiry models that can be used to contribute to students' service learning, the key steps in these models follow a sequence of investigation, preparation and planning, action, reflection and demonstration. Reflection can take many forms (text, art, diverse media and materials). Authentic, meaningful and critical reflection will allow students to better plan and investigate future service learning experiences. Students can be encouraged to clarify their expectations and to develop their reflective skills.

6. Celebrate service learning. It is important for schools to send the message to the whole school community that service learning is a key part of students' education. Students' achievements in this domain may be recognized or staff involvement acknowledged. Service learning can also provide opportunities to bring all members of the school community together and can be used to explore partnerships with parents and alumni.

Suggested readings: Berger Kaye, 2010; ISG, 2009; Kolb, Rubin & McIntyre, 1974; Short et al., 1996; Sternberg, 2009.

9. LEARNING SUPPORT

Teaching students how learning happens and how they themselves can become better learners is imperative for student progress

Research Findings

An area that is particularly interesting to investigate is learning support (also called special educational needs), mainly because the strategies that have been developed in this area of education, such as accommodations (adjusting teaching practice to meet learner's needs) or modifications (adapting the content of what is being taught) apply to the needs of all students in a modern educational paradigm. We see such strategies as necessary elements of differentiated instruction for all learners, especially with the advent of new technologies that allow for adapted online learning environments.

Learning support remediation involves metacognition (learning about learning), scaffolding, mastery learning, high levels of feedback and multiple strategies for learning. In many ways, this type of pedagogy is a distillation of the quality and excellence that is prevalent in any high-performing classroom. In this regard, teachers consider themselves specialists in cognitive psychology rather than merely subject specialists. It is important for the psychology of learning to be promoted if we are to rise to the challenge of providing students with an education in which they can succeed.

A typical process in learning support is the development of an individual education plan (IEP) focused on the specific learning goals of the student. This highly individualised approach to learning should not be reserved just for those experiencing difficulties, but could form the basis of general teaching and learning.

A differentiated instructional programme is one where every learner's needs are met. Recent neurobiological progress has directed educational philosophy to the idea that each individual learns differently and that differentiated instruction is vital if what we want to achieve is not just getting the curriculum covered but seeing students truly master their learning. Therefore, differentiation should not be considered a strategy to be used only in exceptional circumstances; that implies that the norm is a one- size-fits-all approach, in which little attention is paid to the student's specific needs.

Implications for Educators

1. Respect learning styles and capabilities of all students.

By valuing diversity, educators are responsible for differentiating their instruction to correspond to the needs of their students. To respect the diverse needs of students, schools can constantly seek to better understand the way students learn and to provide them with suitable support and innovative approaches. Teachers are also encouraged to

create safe, respectful and challenging learning environments for students to achieve their individual potential both inside and outside the classroom. It may also be necessary for schools to devise procedures for removing students from particular lessons or introducing them into other lessons, with careful attention paid to the role of teaching assistants, in order to provide them with the support they need based on their learning style. This strategy should be coupled with a constant reassessment to determine re-integration of withdrawn students into the mainstream.

2. Provide strategies to encourage confidence.

By encouraging students to be independent learners who understand their strengths and weaknesses and who can self-regulate, schools aim to educate and prepare them to be adaptable, and to function in the world around them. Teachers can achieve this by being aware of and promoting strategies that support self-regulated learning, such as goal setting, planning, attention control, self-monitoring, help-seeking and self-evaluation.

3. Reward progress and provide feedback.

To support student progress, teachers can reward effort and provide feedback as necessary to students. This includes designing realistic, attainable, individualized objectives for students, identifying barriers to learning and showing students how to overcome them. Celebrating outstanding student achievement in different areas of learning allows for recognition of diverse skillsets. Assessment can be used to drive teaching and learning, encouraging students to view learning as something that can incrementally evolve and improve, rather than as a process that is out of their control.

4. Collaborate with parents, students and colleagues.

Finally, collaboration is important in providing effective support for students. Working in interdisciplinary teams, teachers can create a collaborative environment that allows for an exchange of expertise and ideas among all professionals. It is recommended that schools

attempt to cultivate strong, trusting partnerships with parents, students, teachers, administrators and educational specialists. This can be done by holding frequent student support group meetings and preparing Individual Education Plans (IEPs) where appropriate. Ensuring ongoing, effective professional development opportunities may also stimulate learning support and new approaches for all teachers.

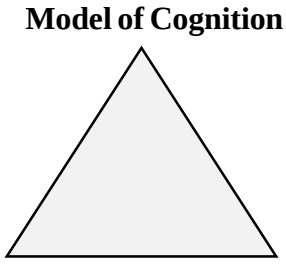
Suggested readings: Dweck, 1999; Zumbrunn, Tadlock & Roberts, 2011.

10. ASSESSMENT

Assessment, through a range of techniques, is important to evaluate progress and follow students on their learning progression

Research findings

Educational assessment involves three interconnected parts: a model of cognition, an observation instrument and a model for interpreting student performances. These elements can be represented as a triangle. For assessment to be of high-quality there should be symmetry among the three vertices of the triangle.



(Developed from Pellegrino, Chudowski & Glaser, **2001**

Cognition refers to thinking and learning. Assessment begins with a clear understanding of the cognition that is desired. This model of cognition can include knowledge types (propositional/ declarative, procedural, dispositional, applied); skills (discursive writing, arithmetical calculation) and competences (critical thinking, creativity, collaboration); attitudes(perseverance, open-mindedness); and metacognition (thinking about thinking and learning about learning).

An observation instrument refers to the instrument that is developed to stimulate a student response and to record that response. An observation instrument allows students to represent their knowledge, skills and competences, attitudes and/or metacognition through conversations, responses to questions, or performances on various tasks. To ensure that assessment is fit for its purpose, teachers need to choose an observation instrument that is appropriate for the corresponding model of cognition. A key measure of the quality of an observation instrument is its validity. There are numerous types of validity, but the most essential ones to consider include:

- Face validity – whether the observation instrument really captures or tests the learning that it is supposed to
- Ecological validity – whether an observation instrument is appropriate to the context

Interpretation refers to what can be assumed about what a student knows and can do based on responses to the observation instrument. In order to interpret student performance, the evaluator needs assessment criteria or "rubrics". A key concept to consider when interpreting student performances is reliability: in other words, how sure can we be that the conclusions we reach about student performances on observation instruments are accurate, fair and stable. There are many types of reliability, but some of the main ones to consider are rater reliability (how consistent the scorer is) and grade-cut reliability (how accurate and fair the ways of categorizing student

responses are).

Clarifying the purpose of an assessment before it is designed is essential. Purposes include:

- *Diagnostic*, meaning that the purpose of the assessment is to establish what a student already knows and can do, usually at the beginning of a unit or course of study
- *Formative*, meaning that the purpose of the assessment is to help students in their learning (assessment *for* learning)
- *Summative*, meaning that the purpose of the assessment is to evaluate how much a student knows or can do once they have completed a learning experience, which usually happens at the end of a unit or course (assessment *of* learning)

The purpose of an assessment will influence task design, assessment criteria and interpretation. While assessments can have more than one purpose, in general the larger the number of purposes for a single assessment, the lower the quality and precision of the alignment of the assessment triangle vertices.

Implications for educators

1. Use a variety of sources of evidence.

Sources of evidence, including peer- and self-assessment, help students with different learning styles realize learning outcomes. Teachers can also conduct peer evaluations outside the formal evaluation process to keep open discussions about the principles of assessment.

2. Have a clear understanding of the purpose, expectations and learning objectives.

Assessment needs to be based on agreed criteria that are communicated to students before they engage in a task. Where collaborative skills are being assessed, it is important to give students clear guidelines on how best to work in groups, so that all students are engaged and every contribution is treated with respect. Feedback should correspond clearly with assessment goals and criteria. It is

also important for assessment to take into account the language ability of individual students.

3. Emphasize assessment for the purposes of learning.

This involves detailed, process- and task-specific feedback, allowing learners to understand how they are doing, where they are going and what they need to do next, in order to keep learning moving forward. Feedback should be timely, specific, and focused on learning progression. Student responses to assessment feedback then form the basis for subsequent learning.

4. Allow students to generalize their knowledge, skilfulness and/ or competency.

The end of a learning cycle (unit, topic, term, year) can contain assessments with a summative purpose that involve the basic principles of quality test design. It is important that assessment be designed to maximize the reliability of interpretations made about student performance. To ensure this, teachers can observe each other's grading frequently and agree on what particular levels of achievement look like at particular ages and domain-specific levels.

5. Ensure authenticity and relevance of assessments.

Assessments derived from authentic materials (analogies, models, concrete examples, applications) allow students to come into contact with real-life situations. This encourages learners to connect their learning with a real-world context that is relevant to them.

6. Enable fair and equitable conditions.

Allow students from a variety of backgrounds to show what they can do and what they know. Well-designed assessment tasks will attempt to minimize external, material or culturally-specific influences that can affect student performance because they are suitable to some learners but not all of them. Carrying out diagnostic assessments at the beginning of work can also make sure that students' prior knowledge and misconceptions are identified and discussed before the teaching and learning of a new unit begins. It is important to design assignments regardless of the availability of equipment, home-

learning environments and parent dispositions; rather, focus on minimal resources and student-centred factors that have been established and monitored appropriately in the classroom.

7. Encourage students to take responsibility for their own learning.

Portfolio assessments allow students to show pieces of work that correspond to the learning process, the areas where they are strong, and what they know or can do outside of the school's learning parameters. Encouraging students to reflect on learning also allows them to take ownership of the process by giving them ample opportunity to look over the work they are doing and have done, understand the processes that are or were involved, and think about the strategies they used to reach their new level of learning.

8. Achieve a strong alignment of the three vertices of the assessment triangle.

This can be done by ensuring that the model of cognition is reflected in an observation instrument that is valid and fit for its purpose. Interpretations made about student performances on the observation instrument can then be aligned with the limitations and nature of the instrument in question, as well as the intended learning outcomes. Finally, it is recommended that curriculum leaders provide clear school-level guidelines on feedback, reporting and grading to the teaching community.

Suggested readings*:* Black, 2013; Hattie & Timperly, 2007; Mercer et al., 2004; Pellegrino, Chudowski & Glaser, 2001.

CONCLUSIONS

These principles bring together core elements for learning in the twenty-first century. They encompass a notion of learning that involves knowledge, competences, values and attitudes, rather than just narrow, technical skills. Furthermore, the principles incorporate school processes and the involvement of the learning community.

They require deep reflection and action to make education more meaningful. As such, this is a holistic account of learning, a vision that spans some of the essential questions that we must ask ourselves if we want students to be empowered for lifelong learning in today's complex world.]

The development of these principles was made possible through collaboration among teachers, students, parents, school leadership, academics and researchers. Its implementation and success will depend on similar commitment to genuine collaboration.

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TASK, TEACHING AND LEARNING: IMPROVING THE QUALITY OF EDUCATION FOR ECONOMICALLY DISADVANTAGED STUDENTS

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INTRODUCTION

Students of all ages spend a good amount of their time in classrooms engaged in some type of academic work (e.g. worksheets, workbooks, scientific projects, essays, research papers). On average, students from elementary through high school spend approximately one- half of their classroom time working by themselves ("seatwork") or in groups ("group work"). This time estimate does not include work to be completed at home ("homework"). For college and university classrooms, this figure drops to one-third, with most in-class work done in groups.

Because most of this work is assigned by teachers, each piece of work is often referred to as an assignment. We prefer the term task because the concept of task gives purpose to the assigned work. That is, TASK = ASSIGNED WORK + PURPOSE. For students, tasks provide the answer to the often heard question, "Why am I doing this assignment?" Suppose, for example, students are given a diagram of the human muscular system and instructed to label each muscle. What is the purpose of this assignment? Is it to pass some external examination? Is it to prepare for an internship in an orthopedist's office? Or is it for some other purpose? Although there is only one assignment, there are multiple purposes (and hence, multiple tasks).

In addition to differences in purpose, tasks differ in their settings, subject matters, scopes, forms, and complexity. Setting refers to both the physical setting (e.g., classrooms, hallways, laboratories, homes, community centers, open fields) and the social setting (e.g., individuals, small groups, competitive, cooperative). The subject matter is the content or academic discipline in which the task is embedded (e.g., language arts, science, visual arts, trades and industries, multi-disciplinary). The scope refers to the length of time needed to complete it (e.g., thirty minutes, three weeks, one semester). Form is the way it is presented to students as well as the way in which students are to respond (e.g., a worksheet with ten pairs of words and pictures to be matched, an essay to be written comparing two different forms of government). Finally, complexity refers to how complicated the task is to understand and/or to complete. For example, procedural tasks (that is, tasks that can be completed by following a prescribed sequence of steps) are less complex than creative tasks (that is, tasks that require the person completing them to invent a way of performing or completing the task).

Every task can be analyzed in terms of these six dimensions: purpose, setting, subject matter, scope, form, and complexity. Suppose, for example, a problem set is given to students for the purpose of seeing whether they can apply scientific knowledge to solve six practical problems. Each problem in the set can be considered a separate task. Students are expected to complete the six tasks working in groups of three seated around a table (setting). Each of the six tasks requires the application of scientific knowledge (subject matter) and is presented in an open-ended form. Because they are unfamiliar problems with no ready-made solutions, the complexity is reasonably high. Finally, students are told that they will have 45 minutes to complete the assignment (scope).

Because tasks are so prevalent at all school levels, they are often forgotten as a focus area in attempts to list the characteristics of effective teachers or "best teaching practices". In rather comprehensive lists prepared by researchers and educational practitioners,

one rarely encounters the terms "work," "assignment," or "task." The purpose of this booklet, then, is to describe the central role that tasks play (or, perhaps more accurately, should play) in school learning, particularly in efforts to improve the quality of education for economically disadvantaged children and youth. In this booklet we offer a set of eight principles that, when properly applied, should enable teachers to (1) understand more fully the tasks they are using, (2) increase awareness of the reasons for using the tasks, and (3) design, select, and use tasks more effectively with economically disadvantaged children and youth.

Suggested Readings: Doyle & Carter, 1984; Hunt, 2009; MacGregor, 2007; National Survey of Student Engagement, 2013; Shernoff, Csikszentmihalyi, Schneider & Shernoff, 2003.

1. ENGAGE WITH AUTHENTIC, RELEVANT, AND MEANINGFUL CONTENT

When tasks are authentic, relevant, and meaningful, economically disadvantaged students are more likely to value what they are learning and make important connections between what they are learning, what they have learned, and how their learning is related to their lives outside school.

Research Findings

For a wide variety of reasons, economically disadvantaged children tend to be placed in classrooms (and sometimes entire schools) with other economically disadvantaged children. This placement has implications for the curricular demands placed on these students as well as the type and pace of instruction they receive. The curriculum tends to focus on rote memorization and algorithmic skills with few opportunities to think and reason. Teachers tend to rely on recitation and worksheets to deliver instruction (and, some would say, control students' behavior) and move along at a much slower pace. The prevalence of the *status quo* has led some researchers to question whether it is possible to provide high-quality instruction to low-status

groups. We believe it is possible when tasks are chosen based on their authenticity, relevance, and meaningfulness. Before moving on, we need to make sure that the meaning of each of these three criteria is clearly understood.

Authentic tasks have value beyond the classroom – they connect what students are learning in school to the "outside world." In contrast, tasks are relevant to the extent that they are consistent with students' needs and/or interests. It is important to point out that a task may be authentic, but not relevant. This distinction is particularly important for economically disadvantaged students. Finally, tasks are meaningful to the extent that they enable students to make sense of their experiences. "Making sense" means that students are able to build connections between what they are learning and what they have previously learned. Because economically disadvantaged students often have limitations or gaps in their prior learning, it is often more difficult for them to "make sense" of what they are being taught.

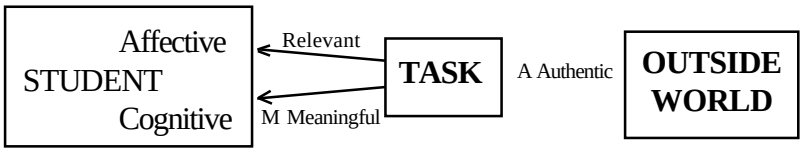

Figure 2-1. The relationship of tasks with authenticity, relevance, and meaningfulness

Authenticity and relevance have consistently been associated with students' motivation (that is, a willingness to expend the effort needed to learn) and engagement in learning. Meaningfulness enables students to transfer their learning to new situations, rather than simply retain (and regurgitate) what they have been taught. When a task meets all three criteria, it increases the likelihood that students will (1) complete the task and (2) connect task completion with important learning outcomes.

Implications for Educators

1. Take time to get to know your students and, equally importantly, the homes and communities in which they live. Although most teachers are quite knowledgeable of the subject matters they teach, they are often less knowledgeable of their students' lives outside of school. This lack of knowledge is particularly acute when teachers and the students they teach come from very different cultural backgrounds. To acquire or improve their knowledge in this area, teachers can visit children's homes, take supervised walking tours of neighborhoods, and participate in "town hall" meetings attended by parents, family members, and community leaders.

2. When selecting or designing tasks, try to find a balance between authenticity and relevance. Authenticity comes from knowing how what is being taught is applicable in the "real world". With young children, for example, environmental print is all around them. Therefore, tasks that use street signs, billboards, food labels, and greeting cards to teach early reading skills such as word recognition and phonemic awareness are quite authentic. To ensure that these authentic tasks are relevant, teachers should take steps to ensure that the environmental print examples can be seen within the neighborhood.

3. Make every attempt to make tasks meaningful. As mentioned earlier, meaning requires that students make connections between what you are teaching and what your students already know. Notice that it is the students who must make the connection. When teachers attempt to make connections for students, they begin with what they are teaching. When working with economically-disadvantaged children, however, it is much better to begin with whom you are teaching. Rather than giving students examples because they "fit" the topic being taught, begin by soliciting examples from the students and then "fitting" them to the topic as appropriate.

Suggested Readings: Harris & Marx, 2009; Mayer, 2001; Roberson, 2013.

2. USE LEARNING TASKS AS A PRIMARY BUILDING BLOCK OF THE CURRICULUM

When teaching economically disadvantaged students, learning tasks should take precedence over teacher-directed instruction; furthermore, assessment tasks should always precede practice tasks.

Research Findings

There are three primary purposes for assigning tasks to students. A learning task is intended to facilitate initial learning – to move students from ignorance toward knowledge or from ineptness toward proficiency. An assessment task is intended to determine whether or how well students learned what they were expected to learn. What knowledge did they acquire? What is their level of proficiency? Finally, a practice task is intended to facilitate retention (e.g., of concepts or facts), fluency (e.g., of reading or mathematical computations), or automaticity (e.g., of keyboarding or playing a musical instrument).

For low-achieving or "struggling" students, a group that quite often includes numerous economically disadvantaged students, the teaching they receive follows a fairly predictable sequence. Teachers talk to or with their students, after which students work alone or in groups on an assignment given by the teacher. This "talk-work" sequence can occur once during a class period or be repeated several times. The assumption underlying this sequence is that students learn by listening to and/or watching the teacher, not by engaging in a task alone or with others. Therefore, it is only after students have been taught that tasks are assigned to them. The purpose of the tasks, then, is either to assess whether students learned what they were taught or to give students opportunities to practice what they were taught.

Although the "talk-work" sequence is observed quite frequently in countries throughout the world, it is not found in all classrooms or in all countries. In Japanese mathematics classrooms, for example, teachers begin the lesson by presenting a learning task to their students. As a class, students discuss the task, attempting to solve the problem or answer the question embedded within it. The teacher assumes the

role of guide and/or resource. In situations like this, either "work" precedes "talk" (that is, the sequence is "work-talk") or "work and talk" occur simultaneously rather than sequentially.

Implications for Educators

1. When teaching economically disadvantaged students, use learning tasks as a primary building block of the curriculum. Over the past quarter century it has become common knowledge that learning requires that students remain actively engaged in the learning process over a substantial period of time. To use a phrase common in the 1970s and early 1980s, students must spend a reasonable amount of "time-on-task" if they are to learn. A curriculum built around learning tasks has the potential to transform economically disadvantaged students from passive recipients of knowledge to active participants and learners.

2. Contrary to the old adage that practice makes perfect, practice makes permanent. Whatever is learned, whether correct or incorrect, remains with students when practiced. As a consequence, practice tasks should be assigned only after there is some evidence that students have learned what they will be practicing. The primary source of this evidence should be assessment tasks, not assumptions made by the teacher based on informal observations and impressions. The "assessment-practice" sequence is particularly important for economically disadvantaged students who are more likely to return to homes in which support for completing homework successfully is lacking.

3. Finally, integrate assessment tasks throughout the entire teaching/learning process rather than assigning them at the end of some specified time period (e.g., a week) or the completion of a unit of instruction. Assessment serves different functions at different points in the teaching/learning process. At the beginning, assessment can provide you with important information about what students know and can do (and do not know and cannot do) before instruction begins.

In the middle, assessment can give you information about how well things are going so that changes can be made, if necessary, to ensure overall learning success. In the end, assessment can provide you with the data you need to assign and justify the grades or marks on students' report cards.

Suggested Readings: Anderson, Ryan & Shapiro, 1989; Haberman, 1991; Jacobs & Morita, 2002; Logan, 1985; Murphy, 2003

3.BECOME THE 'GUIDE ON THE SIDE'

The proper implementation of task-based learning for economically disadvantaged students requires significant changes in the roles and responsibilities of teachers and students.

Research Findings

Consider a movie or a stage play. There are three principle roles: directors, actors, and audience members. In many if not most classrooms, teachers are actors, students are members of the audience, and supervisors or administrators are directors. In fact, several articles and at least one book have been written advocating teaching as a "performing art." To properly implement task-based learning, these roles must change. The teacher becomes the director and the students are the actors. There may be multiple audiences at different times (e.g., administrators, supervisors, or parents) or there may be no audience at all, just actors and the director (as would be true in dress rehearsals).

As directors, teachers must attend to the "big picture" – that is, the settings (physical, social, and emotional), the actions and interactions of the actors in those settings, and the interactions of the actors with the director. Borrowing from drama theory, the term used to describe this "big picture" is "scenario". Scenarios differ from traditional lesson plans in at least two respects. First, lesson plans typically focus on content, whereas scenarios focus on contextually-based, task-

directed, content-embedded activities. Second and directly related to the first, lesson plans often emphasize what teachers should say and do to "deliver" instruction. Scenarios, on the other hand, focus on what students should say and do to complete the task and master the objectives. In this regard, it is interesting to note that the indicators found on virtually all teacher evaluation instruments in the United States focus on teachers, not students.

This shift in roles and responsibilities is consistent with the generally accepted theory that learning involves constructing knowledge (rather than merely reproducing it) by means of asymmetric social interactions with more competent partners. Furthermore, learning is not an individual, isolated, de-contextualized act; rather, learning is situated in particular contexts (historical, social, cultural, and environmental). Simply stated, academic learning quite often involves internalizing cognitive activities within social settings.

Implications for Educators

1. Design scenarios rather than prepare traditional lesson plans.

Each scenario should (a) have a clear purpose, (b) enable students to become and remain actively engaged in learning, (c) assist students in achieving challenging learning goals and objectives, and (d) empower students to develop new forms of thought and ways of thinking. When classroom learning environments are conceptualized as scenarios, students become apprentices who see how knowledge is used in competent performance as they gain proficiency themselves.

2. Within these scenarios (and borrowing from Ted Sizer), assume the role of "guides on the side," rather than "sages on the stage." This is not to suggest that you never talk to or with your students. Rather, this is to suggest that when you do talk, what you say should be focused, clear, and fairly brief, just long enough to get the point across. The vast majority of classroom time should be monitoring students' work, listening to discussions (redirecting them as necessary), asking clarifying and probing questions, and serving as a learning resource when needed.

3. Because an emphasis on active learning is often associated with a great deal of classroom activity, it is easy to lose perspective. To maintain a proper perspective, you must achieve a balance between what students do and what students learn. It is important to remember that students should not learn activities, they should learn from activities. Students must be reminded of the purpose of activities (that is, the learning objectives). This can be accomplished by stopping them periodically and having them answer the question "What have you learned?". If students can recount what they have done in class, but cannot articulate what they have learned, the design and/or implementation of the scenarios should be modified.

Suggested Readings: Darling-Hammond, 2012; Glaser, 1991; Hyslop-Margison & Strobel, 2008; Pešikan, 2010; Sarason, 1999; Sizer, 1997.

4.FOCUS ON LEARNING STRATEGIES

Focusing on learning in addition to contents coverage is key to successfully implementing task-based learning for economically disadvantaged students.

Research Findings

Virtually all educational objectives can be written in a common format: subject-verb-object. The student (subject) will contrast (verb) poetry, drama, and prose (object). The student (subject) will apply (verb) a variety of properties to simple algebraic expressions (object). The object represents the content to be learned. The verb indicates how students are expected to process that content. When teachers focus exclusively on content, they leave the choice of process to the student. In the first example, if the teacher only talks about poetry, drama, and prose, some students may memorize definitions, others may decide that they prefer drama to poetry and prose, and still others may focus on the differences among them. If the assessment is aligned with the objective, it seems reasonable to expect that the last group will perform the best. In this

case, students are not being penalized for failing to learn the content; rather, they are being penalized for choosing and using the wrong learning process.

When students learn, they must rely on two kinds of prior knowledge: content knowledge and knowledge about how to learn content. Economically disadvantaged students often lack requisite background knowledge. If they do possess the knowledge, it may be disorganized and/or cognitively inaccessible. In addition, economically disadvantaged students often show substantial deficits in their awareness of their cognitive and metacognitive strategies as well as those strategies that produce more effective learning. Cognitive strategies are inherent in the verbs included in the statements of objectives (e.g., contrast, apply). Metacognitive strategies, on the other hand, are more generic in that they apply to multiple objectives and, often, to multiple subject areas (e.g., elaboration, keyword mnemonics, imagery).

This shift from "transmitting content" to "providing strategies" mirrors the aforementioned shift from a focus on teachers teaching to an emphasis on students learning. Both of these shifts are made easier within the context of task-based learning. When students are given true learning tasks, they must – individually or collectively – determine how they intend to work on and complete the task. They must also retrieve prior knowledge that is necessary for or facilitative of task completion and mastery of the objectives.

Implications for Educators

1. When teaching economically disadvantaged students, work to achieve a balance between content and process. Performing an activity or using a strategy, but learning nothing by doing so, is unacceptable. You can achieve this balance by continually emphasizing the importance of monitoring and evaluating. Monitoring involves answering pairs of questions such as "Am I making progress?" (the task) and "What am I learning?" (the objective). Evaluating involves pairs of questions, such as "Have I accomplished

the task on time and am I proud of my accomplishment?" and "Have I learned what I should have learned?". Within the context of metacognition, monitoring and evaluating are key components of self-regulation.

2. Help students understand that different strategies are more or less useful for different kinds of learning. Mnemonic and rehearsal strategies are intended to help students remember key facts or concepts. Strategies such as self-explanation and re-reading are most useful for facilitating understanding. Finally, strategies such as summarization, outlining, and highlighting text are intended to help students analyze and organize what they are attempting to learn. Matching strategies with intended learning outcomes, then, is another way of balancing content with process.

3. Teach general strategies to all students, while at the same time encouraging them to invent their own. There is, for example, a very useful four-step strategy for working on longer-term tasks: (a) organize/plan, (b) manage the work (e.g., ensuring that all resources are available, setting interim deadlines to ensure a proper pace), (c) monitor progress, making adjustments as necessary, and (d) evaluate the quality of the work. Within each of these fairly large steps, however, students can experiment with strategies that are unique to them as individuals or as members of a group. For example, what's the best way to get the information I (we) need? How should I (we) organize the work so I (we) meet the deadline?

4. Finally, go beyond the "correct answer" to explore how students arrived at their answers to questions or solutions to problems. What strategies did they use (if any)? Did they use the strategies properly? To find answers to these questions, you may ask students questions such as "How did you arrive at that answer or solution?" When attempting to balance content and process, both the correctness of the answers and arriving at the answers in appropriate and reasonable ways are important considerations.

Suggested Readings: Askell-Williams, Lawson & Skrzypiec, 2011; Donovan & Bransford, 2005; Dunlosky, 2013; Gaskins, 2005; Millar, 2004.

5. BE EXPLICIT ABOUT EXPECTATIONS

Teachers must ensure that economically disadvantaged students clearly understand the behavorial, academic, and social expectations of a task before they begin to work on it.

Research Findings

To properly implement this principle, direct and explicit instruction is advisable. There is increasing evidence that the quality of student work is much better when teachers provide extensive directions for the tasks than when less detailed directions are provided. Understanding the task entirely before beginning work enables students to "see" and think about the "whole," rather than focusing on the "parts." Suppose, for example, students are given a short story and asked to analyze it in terms of a set of literary elements (e.g., plot, setting, character, theme, mood, and tone). Are they expected to read the short story in class, at home, or both? Is it permissible to work with other students? Are they encouraged to do so? Should they focus on each literary element individually or on the relationships between and among them? What is the nature of the final product (e.g., a test, an essay)? What is the deadline? How will the final product be evaluated? If the final product is a test, how many items must a student answer correctly to get a particular grade or mark? If the final is an essay, what are the evaluation criteria and performance standards? Is a rubric available to clarify performance expectations? Answers to these and similar questions are necessary if students are to fully understand the teacher's expectations concerning all aspects of the task. Why is this explicitness important for economically disadvantaged students? At least two reasons can be given. First, without answers to questions such as these, students are left to their own devices. When the expectations of students are inconsistent with those of the teacher, the likely results are confusion, poor performance, and, particularly with older students, resentment. Second, economically disadvantaged students may not understand the teacher's expectations in terms of quality. What is an excellent score on a test and how is that determination made? What is an

excellent essay or research paper? It is one thing to know that an essay needs to be of a certain length and should be written using a consistent manual of style. It is quite another to understand what makes an essay an excellent essay and, perhaps more importantly, how an excellent essay differs from a mediocre or poor one.

Implications for Educators

1. Connect behavioral and academic expectations whenever possible.

One of the most important things that economically-disadvantaged students can learn in schools is the connection between effort (behavioral) and achievement (academic). Economically disadvantaged students are often told they are not smart enough to learn difficult or complex material. Such statements quite naturally lead to an ability-achievement connection. "I cannot learn no matter how hard I try" is a comment often heard during interviews with economically disadvantaged students. The expectancy-value theory of achievement motivation states that students will put forth the effort needed to learn if they value what they are learning and if they expect to be successful in their attempts to learn it. Therefore, helping economically disadvantaged students forge a link between effort and achievement will quite likely enhance their motivation.

2. Communicate explicit performance standards that define acceptable and/or excellent performance. In evaluation, the criteria are the factors or aspects that are taken into consideration in making a judgment about the quality of work or learning. For example, organization, clarity, and mechanics are criteria often used to evaluate essays. "Mechanics" refers to sentence structure (including subject-verb agreement), word choice, spelling, and punctuation. A performance standard defines what is acceptable or excellent for each criterion. The statement, "All your papers should be free or almost free from errors", is a performance standard associated with mechanics. When a task is assigned, it is important to communicate explicit performance standards. If the task is the completion of a problem set in mathematics, the performance standard

would state the number of problems that need to be solved correctly. [In this example, the sole criterion is correctness.] If the task is a written report, then rubrics can be used to communicate both criteria and performance standards. If rubrics are used, however, it is important when working with economically disadvantaged students to give them opportunities to apply the rubric to written reports that differ in their quality so that they begin to understand what differentiates acceptable from unacceptable or excellent from "less than excellent".

3. For tasks that require multiple weeks to complete, establish a series of deadlines for completing and submitting work. For example, "I want to see an outline of what you are proposing by February 1st. Then, I want to see a rough draft of your report by February 21st and a final draft of the report by March 4th." These benchmarks permit students to feel that they are making progress, while at the same time allowing teachers to give feedback that will likely result in superior products being produced.

Suggested Readings: Hattie, 2009; Rust, Price & O'Donovan, 2003; Sadler, 1998; W'igfield, A. & Eccles, 2000; Wolf & Stevens, 2007.

6. INTEGRATE LESSONS THROUGH PROBLEM-BASED LEARNING

Tasks that require multiple days or weeks to complete provide economically disadvantaged students with greater flexibility in learning time and enable them to integrate bodies of knowledge and apply clusters of skills.

Research Findings

As mentioned in our discussion of Principle 2, much of the teaching experienced by economically disadvantaged students can be understood as a series of "talk-work" sequences. The work tends to be assigned daily and is given to students as practice or as an

assessment of their learning. Although these daily assignments have some value, they have at least two negative consequences. First, they emphasize discrete rather than integrated learning. In discrete learning, students master one lesson or objective and move on to the next. In integrated learning, connections between and among lessons and objectives are emphasized. Second, the assignments are intended to be completed in a limited amount of time: if not the same day then the next day. As a consequence, there is little, if any, time to re-teach what has not been learned or has been learned poorly.

Project-based or problem-based learning (PBL) is an approach that emphasizes learning tasks that are integrative and typically require multiple weeks to complete. The difference between conventional instruction and PBL can be seen quite clearly in the field of second language learning (SLL). Conventional SLL instruction is based on the assumption that students need to be taught grammatical and linguistic structures and rules before they can communicate. The use of PBL in SLL is based on the assumption that students learn a language (including its structure and rules) by communicating.

The overall project task is presented as an open-ended question, typically referred to as a "driving question." Examples include "What is the quality of air in my community?" and "How are good and evil depicted in different cultures?" Students are explicitly told (1) what the task is, (2) what they must do to complete the task, and (3) what they must submit once the task is complete (i.e., the deliverable).

Although PBL requires more planning than conventional teaching, the Internet provides a great deal of support for planning and implementing PBL as well as WebQuests that students can complete on-line. The Buck Institute for Education's website (bie. org) contains a checklist of the essential elements of PBL. The website http:// webquest.org/ provides useful information about the design and use of WebQuests as well as several examples.

Existing research suggests that PBL is often more beneficial for economically disadvantaged students than for their more advantaged

peers. In some cases, participation in PBL has virtually erased the achievement gap between students from high- and low-socioeconomic backgrounds.

Implications for Educators

1. Start small! One of the biggest mistakes teachers make in implementing PBL is to think too big. Initially, projects should take no more than a week or two to complete. Rather than doing real-world fieldwork, fieldwork can be simulated in the classroom, using technology if necessary and available.

2. Design or select tasks, particularly driving questions, that are authentic, relevant, and meaningful (see Principle 1). Asking students what they are interested in learning about a particular subject, what problems they see in society at large, and/or what questions are being asked by experts in specific subject areas may provide useful information for formulating appropriate questions. Complete tasks can then be built around these questions.

3. Do not use PBL with objectives that focus on memorizing large amounts of factual information. When memorization is the goal, more conventional teaching methods are more likely to produce positive results since these methods allow more material to be covered in less time.

4. Finally, model the inquiry process when working with students as they work on their projects. Spend more time asking questions than giving answers. Suggest additional data that may be useful to consider, encourage them to draw conclusions based on the data, and demonstrate how to communicate these conclusions clearly to a variety of audiences.

Suggested Readings: Abbitt & Ophus, 2008; Halvorsen et al., 2012; Milson, 2002; Murphy, 2003; Nunan, 2004.

7. INCORPORATE COOPERATIVE TASKS

Cooperative tasks enable economically disadvantaged students to aquire the social- interpersonal and metacognitive skills they will need to be successful in life.

Research Findings

Recruiters at major corporations report that a lack of technical skills is not an issue in finding qualified applicants; rather, the problem is a lack of human relations or "people" skills. Surveys of employers consistently show that more than half of job applicants are deficient in their interpersonal skills. Surveys of managers suggest that they spend the vast majority of their time (as high as 95%) dealing with personnel matters. More than two decades ago, the American Association for the Advancement of Science argued that a core practice of scientific inquiry is collaborative work. Therefore, schools should engage students in classroom tasks that require joint efforts to complete.

Although teachers using more conventional methods tend to view student-student communication as disruptive and potentially problematic, most task-based approaches provide ample opportunities for student-to-student communication and collaborative work. Cooperative learning is one such approach. Simply stated, cooperative learning is a form of active learning in which students work together to perform specific tasks in small groups. Each cooperative learning group is carefully selected so that a heterogeneous structure allows each student to bring his or her strengths to the group effort and benefit from the strengths of other members of the group. As should be obvious, cooperative learning is quite compatible with project-based learning (see Principle 6). However, whereas the the focus of project-based learning is the end result (that is, the completion of the project), a major focus of cooperative learning is on the process by which the end result is achieved.

The evidence suggests that lower-achieving students (a group that contains large numbers of economically disadvantaged students) benefit the most from working in heterogeneous groups, particularly

in the areas of interpersonal and self-regulation skills. Because economically disadvantaged students are more likely to experience residential instability, psychological distress among adults, and low quality childcare settings, they are less likely to develop the self- regulation skills that have been associated with improved academic outcomes.

Implications for Educators

1. Because students must learn social-interpersonal skills just as they learn skills in any academic area, you should (a) select tasks that require collaboration, (b) explain the tasks and the importance of working together to complete the task, (c) structure the group work so that each student knows what he or she is expected to do, (d) model strategies for collaboration and conflict resolution, and (e) help students learn to evaluate the quality of their work both in terms of process and product. The jigsaw technique (see www.jigsaw.org) is often used to encourage collaboration since each student has a unique part to play in completing the task.

2. Pay attention to two often competing factors when designing and implementing cooperative learning: (a) group goals and (b) individual accountability. With a common goal, group members are more likely to be willing to help one another; higher achieving students deepen their learning by explaining concepts to peers and lower achieving students benefit from the additional support offered by peers. Without individual accountability, however, some group members may choose not to participate in the task at hand. Alternatively, a single member of the group may decide to take charge and do everything, minimizing the participation of the other members of the group.

3. Make sure that all students understand what is to be accomplished by the group and how it is to be accomplished in the group. Group work can be frustrating if instructions are unclear. Clear instructions not only explain the task but also specify the time allocated. As a general rule, it is better to allow too little time initially and then expand it as the need arises, rather than give students a 20-minute activity that many groups will complete in 10 minutes.

4. Keep groups together long enough for the group members to establish positive working relationships and establish trust. Students need time to become acquainted, to identify one another's strengths, and to learn how to support and coach one another. This is not to suggest that the same groups should persist for an entire semester or year. Within a semester, two regroupings may be as an optimal number.

Suggested Readings: American Association for the Advancemenof Science, 1989; Duckworth, Akerman, MacGregor, Salter & Vorhaus, 2009; International Association of Administrative Professionals, 2014; Johnson & Johnson, 2009; Lubliner & Smetana, 2006.

8.ACKNOWLEDGE AND ACCOMMODATE STUDENT DIVERSITY

When teaching economically disadvantaged students, a wide range of tasks should be included to accomodate student diversity.

Research Findings

Although we have used the phrase "economically disadvantaged students" throughout this booklet, anyone who works with these students knows that economically disadvantaged students do not form a homogeneous group. Furthermore, the meaning of "economically disadvantaged" differs from country to country and from culture to culture. When countries are compared on international tests such as the Program for International Student Assessment (PISA) tests, the results are likely impacted by some combination of economic and cultural "disadvantage". On such tests, there is ample evidence that, as a group, economically disadvantaged students achieve lower scores than their more advantaged peers. In addition, critics of PISA have argued that differences between countries can be attributed at least in part to the failure to take into consideration cultural differences (especially including language differences) when designing the tests and interpreting the test results.

Although there has been a great deal of emphasis on equal opportunity over the past half-century or more, it is instructive to point out that the Preface to the UNESCO Constitution, signed in November, 1945, includes the phrase "full and equal opportunities for education for all." "Full opportunity" means that each student, regardless of cultural and economic background, must be provided with the best education possible. "Full opportunity" means accommodating students' diversity in ways that provide maximum learning opportunity, rather than treating all students exactly the same (which would meet some people's definition of equal opportunity).

The concept of accommodation is closely related to the concept of fairness. Because fairness is fundamentally a socio-cultural issue, it must be addressed in all aspects of education – curriculum, instruction, classroom rules and routines, assessment, and evaluation. Fairness includes the ways in which cultural and linguistic diversity is approached; the extent to which the content of tasks reflects the experiences of different groups; and the availability of resources for different groups.

In the context of task-based learning, fairness means paying attention to the language, examples, illustrations, and expectations included in tasks. Fairness also means paying attention to the ways in which you interpret and evaluate how students work on tasks and the quality of the work they produce. As teachers examine the tasks they design and/or select, then, they should ask one fundamental question: "Am I providing full and equal opportunities for all my students?"

Implications for Educators

1. Provide variety. There is an old saying that variety is the spice of life. Variety is also important when dealing with classroom diversity. For any given objective, there are many tasks that are appropriate. For any given task, there are many activities that are appropriate. For any given task and objective, there are many ways in which work and learning can be assessed. Suppose, for example, students are

working on a task based on the question, "Which is colder, the North Pole or the South Pole?" They can obtain the needed information by reading, watching videos, or interviewing experts. They can demonstrate their learning by writing a formal research report, preparing and presenting a PowerPoint, completing a graphic organizer, or taking a test. These different activities and assessments provide diverse opportunities for students to learn as well as to demonstrate their learning.

2. Our second implication follows from the first. Permit students to choose from a limited, approved set of alternative activities, assignments, and materials. In some cases, students can work with the teacher to design complete tasks. Imposing limits on student choice is necessary to ensure that the choices are consistent with the learning objective(s). For example, a student cannot choose to do narrative writing when the task requires persuasive writing. The key here is to separate substance from form. The substance of the task (e.g., content, cognitive demands) must be the same for all students. The form of the task (e.g., how to learn and how to demonstrate that learning has occurred) can differ.

3. Work diligently to build relationships with all students, regardless of their economic status, gender, racial identity, or cultural background. In addition, model the behavior you expect from you students. The learning environment, whether defined as the classroom or small groups within the classroom, should be characterized by egalitarian norms and acceptance of diversity. Full participation by all students is always expected, if not demanded. Mutual respect should be evident in every interpersonal transaction, whether it is teacher-student, student-teacher, or student-student. When classrooms and groups within classrooms are characterized by egalitarian norms, acceptance of diversity, full participation, and mutual respect, students experience a sense of belonging. A sense of belonging is a factor repeatedly found to predict the likelihood of staying in school, rather than dropping out.

Suggested Readings: Cole, 2008; Cruzan & Kaluszka, 2010; Iviæ, Pešikan & Antiæ, 2013; Stobart, 2005; Wuttke, 2007.

CONCLUSION

This booklet has highlighted the principles to consider when developing content and curricula to improve the quality of education for economically disadvantaged students. For low-achieving or "struggling" students, a group that quite often includes numerous economically disadvantaged students, engagement in classroom tasks is critical for motivation. Engagement can come through the use of authentic, relevant, and meaningful content that allows students to connect what they are learning to the outside world, to their needs and interests, and to their prior learning. In addition, by reversing the normal "talk-work" sequence in the classroom to "work-talk" or "talk and work", teachers can better observe what students are retaining during learning tasks before moving ahead to assessment and practice lessons.

Adjusting the classroom paradigm by placing the student as the main actor and the teacher as the director providing succinct and helpful feedback from the "side" allows teachers to attend to the "big picture" and plan content and activities depending on the context. Furthermore, focusing on helpful learning strategies – including those unique to each student – is important for students who often show substantial deficits in their awareness of the strategies that produce more effective learning. As noted earlier, economically disadvantaged students are often told they are not smart enough to learn difficult or complex material. Therefore, ensuring that students value what they are learning and expect to be successful in their attempts to learn it is key to motivation.

Project-based or problem-based learning (PBL) is an approach that emphasizes learning tasks that are integrative and typically require multiple weeks to complete, allowing students the flexibility to catch up on learning time and utilize skill clusters. Similarly, encouraging collaboration and cooperation through group activities, both short-

term and semester-long, allows students to utilize their strengths, learn from their peers, and build inter-personal and self-regulation skills often lacking in their outside environments. Finally, acknowledgment of student diversity and an emphasis on egalitarian norms, full participation, and mutual respect among all classroom participants is central to fostering quality education for economically disadvantaged students.

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National Seminar on 21st Century Trends in Teaching and Learning on July 13-14, 2017
at The ICFAI University, Agartala, Tripura

The ICFAI University, Tripura in collaboration with AIAER is organizing a National Seminar on 21st Century Trends in Teaching and Learning on July 13-14, 2017. Last date for submitting abstract is 8th June. Abstract of a research based paper should be prepared within 250 words, under four headings: Aims / Purpose, Methodology of Study, Findings, Relevance / Originality / Value.

Each abstract has to be sent with a covering letter signed by all the authors to seminar@iutripura.edu.in

With a copy to aiaer1987@gmail.com

If scanning of the letter is not possible, it has to be sent by post to Prof. Prem Shankar Srivastava, Faculty of Education, The ICFAI University, Kamal Ghat, Agartala - 799 210 Tripura

Selected abstracts will be notified only through e-mail by 12th June 2017.

Selected abstracts will be notified only through e-mail by 12th June 2017.

The sub themes and the areas o be covered are : SUB-Theme –I: *Trends in School Education:* Quality Teaching Models, Team-Based Teaching ,Teaching in Schools For Talented Children, Teaching in Schools in Difficult Locations (Islands, Deserts, Hilly Regions),Teaching Students of Heterogeneous Learning Level in a Classroom (Effect of Non-Detention Policy), Remedial Teaching (To Control Adverse Effects of Non-Detention Policy), Teaching Students with Special Needs in Special Schools for Handicapped, Teaching Students in Residential Schools in Rural Areas for Education of Disadvantaged, Teaching Students in Residential Schools in Urban Areas, Action Learning, Learning to Learn, Group Learning, Blended Learning, Problem Based Learning, Learning Outside Classroom, Pre-Birth Learning.

SUB-Theme – II: *Trends in Higher Education:* Interdisciplinary Approach, MOOCs, Virtual Classrooms, Role of Andragogy and Heutagogy in Teacher Education, Special Education, Technical Education, Legal Education, Management Education. There is No Registration fee for the Paper presentation at the Conference. **Last date of submission of full paper (Abstract of which has been accepted by 12th June) is 30 June 2017.** After getting acceptance of abstract, the paper presenter is required to intimate following particulars by E-mail: 1.Name of the paper presenter, 2. Title of the paper, 3. Whether paper presentation will be through Power point? (If yes, the paper has to be sent earlier by e-mail), 4.Date of arrival at Agartala (In case of out station participants), 5. Whether the paper presenter needs assistance for hostel accommodation?.

Papers presented at the conference shall be reviewed and if required, paper presenters shall be asked by 16th July to correct the paper and resend by 31st July. Suitable papers shall be included in the Conference publication having ISBN. Paper presenters shall have to bear the cost.

Accommodations can be provided in hostels on first come first serve basis. Information about hotels and guest houses can be given on request. The paper presenters can book accommodation directly. Information regarding accommodations at Agartala may be made available from Internet. Lunch can be provided for both the days on payment of Rs. 200/-.

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