

SUSTAINABLE CURRICULUM IN TVET

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ABSTRACT

In some European countries, students receive vocationally oriented education as early as at the age of 12. The students transfer to lower secondary school at the age of 10-13, with the youngest entrants found in Germany and Austria and the oldest ones, being at the age of 16, in the Nordic countries. The most thoroughly school-based vocational upper secondary education is provided in Finland, Sweden, Spain, Greece and Portugal. The highest proportion of vocational training delivered at the workplace is to be found in Austria (a little less than half) and the Netherlands (a third), that of training combining the workplace and school in Denmark, Germany, France and the Netherlands. Curriculum denotes the formal specification of what is taught and learnt in educational or training establishments. Curricula are formally specified in such learning and teaching entities as units, courses, clusters, sequences and other specifications. Levels of curricula vary from national to student ones, and types of curricula differ from intended to learned syllabi. The traditions of curriculum vary according to national contexts and to historical periods. Curriculum development in TVET is approached from a broad technological knowledge, activity-oriented theories of learning and from the concept of vocation (Beruf). Ethics of sustainable development gives a global and future perspective to education and training. The first two chapters illustrate the global, regional and national policy context of curriculum in TVET followed by a historical discussion about a curriculum theory and didactics. Then the learning theories focus on work-based learning issues and an activity approach. Next the ethics and implementation of education for sustainable development is analysed. Finally a window to the future is opened by a national practice of workforce anticipation.

Key words: *Finland, reform in TVET, policy, education for sustainable development, world of work.*

INTRODUCTION

What is a core nature of vocations? Which role various raw materials, tools, rules and communities play in vocations? What is the mission of TVET to consider ecosystems? The extent to human pressures on ecosystems has increased enormously in the last 100 years. The level of the pressure has risen even more in the last few decades. Since 1980, the global economy has tripled in size, and population has grown 30 percent to over 6 billion people. Consumption of everything from food to paper to computers to oil has risen substantially at a cost of ecosystems. The pressures are not likely to be decreased. Demographers predict the population to grow to nine billion during the next 50 years, and the global economy is expected to expand five times during this period. While crop diversity was reduced in the name of efficiency, environmental impacts and biodiversity consequences highlight the need for more diversity. By 2020 the demand for food (e.g., wheat, rice, and maize) is expected to grow 40 percent. Water demands for irrigation are also increased up to 50 percent or more. Two-thirds of the world's population live in areas that receive a quarter of the world's annual rainfall. Some thirty countries are already facing water scarcity. There is a disparity in the number of scientists and researchers varying from over 2700 scientific researchers per million people in the United States to 130 per million in India and fewer than 70 per million in Africa (Gonzales-Gaudiano, 1997; Shah, 2004).

The United Nations Johannesburg World Summit 2002 on Sustainable Development adopted the objective of human, equal and caring global society, where everyone's right to life with human dignity has been recognised. The documents on United Nations' Decade of Education for Sustainable Development (ESD) provide the foundations to reform and mobilize education at all levels, from elementary schools to universities and from pre-vocational classes to high-tech expertise, in support of sustainable development (UNESCO 2005; UNESCO-UNEVOC 2005).

UNESCO articulated the role of values and culture in moving toward a sustainable future: "... Sustainable development is widely understood to involve the natural sciences and economics, but it is even more fundamentally concerned with culture: with the values of people hold and they perceive their relations with others. It responds to an imperative need to imagine a new basis for relationships among peoples and with the habitat that sustains human life" (UNESCO, 1997).

Achieving sustainable development does require a different approach to conventional economic thinking. Under the conventional model, the system that grows the most and the fastest is considered to be best regardless of its impact on the environment or on human society. The concept of sustainability addresses the imbalance by explicitly adopting the concept of 'development' over 'growth' (NCWD, 2003). Education for sustainable development is most effectively promoted through learning. Therefore, teachers' training colleges, schools and teachers have an important role to advance the high quality sustainable development (Fien & Maclean, 2000; Åhlberg, 1998). Good learning and living environment consists of ecological, economic, social and cultural entities that are imbedded in TVET.

Education and training for sustainable development means that we try to see the globe as a whole and understand our joint responsibility for its wellbeing, including the human life and physical environment. Education for sustainable development aims to raise citizens to adopt certain knowledge, skills, attitudes, and values in domain areas of TVET. Other highlighted objectives include growing into a cosmopolitan, or a citizen of the world, as well as facing the environmental problems of the world and solving them to some extent.

Curricula and pedagogics of education for sustainable development have leant on multidisciplinary and holistic approaches, problem-solving and project-based teaching and learning, promoting ethics (environmental values and attitudes) and critical attitudes (e.g., attention to conflicts of interpretation in science and technology, attention to conflicts of interests in society, and equitable attention to North-South issues on the global scene).

EDUCATION AND TRAINING POLICY

Education and training systems and the usages that they involve are shaped by the historical, economic, cultural and social characteristics and contexts of each country and by special national features of occupational structures and of the development of the division of labour. Professional, technical and vocational education has the task of educating human beings with their identities, developing the national work culture, citizenship skills and individual lifelong learning skills, and of promoting national economic growth and competitiveness in the context of regional and global markets. Fostering equality, ethical values and environmental protection are also the issues of education and training policies.

Strengthening occupational and professional orientation has been a clear trend throughout the 1990s in Finland and in the other European Union countries. Subject-based curricula have been replaced by curricula designed on the basis of the operational complexes of working life, and the aims have been defined as competencies required in working life. There has been a constant increase in collaboration with working life, first manifested as the inclusion of practical training in all qualifications, today seen in the expansion of *work-based learning* at workplaces. The most recent reform of the structure of qualifications similarly emphasises work-based learning that will look different in the contexts where formal, informal and non-formal training are almost parallel practices.

In Finland as in other countries, improvements in the economy, efficiency and flexibility of education have emerged as central educational policy aims during the last decade. This has foregrounded the recognition of out-of-school learning as an important area of educational development work. The recognition of the individual's previous learning is closely linked also with efforts to promote citizens' mobility in Europe and globally. In the last few years, the EU and other international agents have established several relevant mechanisms, many of them associated with the identification, transfer and recognition of an individual's previous competencies in their new countries of work. These measures are connected with, among other things, efforts to enhance the transparency of qualification and educational systems, the introduction of certificate supplements for international use, the development of credit measurement and transfer systems, an expansion of the Europass system, and the development of quality assessment. Europass, as a part of the European Qualification

Framework (EQF) initiative refers to the single European framework for the transparency of qualifications and competences within the policy context of the Copenhagen Declaration.

As people become more mobile, qualifications and their recognition will play a growing role, particularly as regards mobility between the European Union (EU) and the ETA countries. As such, EU directives do not recognise qualifications; instead, they regulate the process where different certificates from education and various occupational competencies derived from work experience are given recognition. The occupational competence that an EU citizen has accumulated mainly in one EU country should be recognised in all countries of the EU. Recognition of qualifications refers to a procedure where a person who has earned a qualification in one country is given an official ruling that their qualification is valid in another country for some particular purpose. A ruling by a competent authority can grant a person the right to conduct further studies, be employed or practise an occupation or use a particular qualification title in the other country.

The credit transfer objective at the European level is indicated in the Council resolution (12/11/2002) in the following way: “to investigate how transparency, comparability, transferability and recognition of competences and/or qualifications, between different countries and at different levels, could be promoted by developing reference levels, common principles for certification, and common measures, including a credit transfer system for vocational education and training”. Finland has implemented credit transfer and accreditation at the national level and in small scale with some European countries. The following activities and projects may be mentioned:

- 1) recognition of prior learning within the national qualification framework.
- 2) establishing the national qualification framework and quality assurance systems in vocational education and training.
- 3) using Europass.
- 4) transfer of modules, on-the-job periods, skills demonstration etc. between some European countries.

Since 2002 Finland has also been a member in a European technical working group including representatives from 12 countries to investigate options for the development of a system of credit transfer for vocational education and training at European level.

The Copenhagen process has been launched to cater to develop a European cooperation area for the field of TVET. However, the related activities appear to direct the attention and procedures that promote transparency between among qualification frameworks and to measures that promote quality management within the field of TVET. As such, these measures are being discussed by government representatives with very little involvement of educational actors themselves. Therefore, it would be of crucial importance to launch *independent studies* on the implications of such measures for education and training providers.

Current Reforms of TVET in Finland

During the last decade the Finnish TVET has experienced three major reforms that are related to each other. The reforms have focused on the qualification structure, polytechnic education, vocational upper secondary education, competence-based training and recognition of prior learning.

1. *Reforms in Qualification and Diploma Structures* addressed the issues such as parity of esteem between different occupational areas, and equal access to higher education or/and high-tech jobs. The reform also focused on the issues of youth unemployment and inclusiveness. *Curriculum Reform of Authentic Learning and Assessment* has enhanced different learning styles. As compared to school-based vocational education, apprenticeship training has not been popular among young people in Finland; only a few per cent of the age cohort has taken up this type of vocational training. The last ten years have seen a growth in the number of apprentices among adult students. Since the reform of apprenticeship training did not have any major impact on youth unemployment, the workplace learning and assessment elements were introduced to the formal education.

In Finland, the framework of the workplace learning experiment was created in the Plan for Developing Education and Research for 1995-2000 by the Finnish Council of State. Reforms of vocational qualifications include workplace learning periods of at least six months. The next Development Plan for 1999-2004 of the Ministry of Education introduced by the Council of State stressed monitoring the reform of vocational qualifications, students' transition from education to working life, and the implementation of routes to further and higher education. Learning at the workplace has become a central element of vocational education; to ensure this, there has been continued support to cooperation between education providers and labour-market organisations. A permanent system of training workplace trainers has been also been created. The Plan for Developing Education and Research for 2003-2008 emphasises international exchanges, among others having workplace training periods in other European countries, and recognising prior learning.

2. *Recognition of Prior Learning and Accreditation in Adult Learning*: the adult education has faced the problems that have resulted from the different levels of educational attainment between younger and older generations. Recognition of prior learning is most widely used in examinations of competence-based qualifications. System and procedures are devised for identifying, assessing and recognising prior learning which would enable learning to be acknowledged irrespective of how, when or where the knowledge and skills have been acquired.

Generally the Finnish vocational education is highly school-based, also assessed by students' preference. There were 54 700 entrants for upper secondary vocational education (school-based and training for a competence-based qualification) in 2001. As delivery modes, both competence-based training and apprenticeship training are chosen by about 10 per cent of vocational students. In 2002, there were 5771 students who gained their vocational upper secondary qualification, 10221 students obtaining their further vocational qualification and

2931 professionals having their specialist vocational qualification through competence-based training and assessment (Ministry of Education 2005).

An adult student is a person aged between 25 and 64 who has returned to education after leaving it on the completion of their first stage of studies. Finnish educational legislation is based on the principle of age neutrality. All types of education are open to applicants of all ages, and adult people can take part in all types of education. In Finland, adult education courses and programmes are annually attended by nearly 1.8 million citizens or some 54 per cent of the working population, a figure that is among the highest in the OECD countries (Ministry of Education 2005). However, participation is uneven across different population groups favouring females and persons with higher educational levels. As regards its forms of organisation and regulatory and funding basis, adult education is divided into three basic types: (1) self-motivated adult education, (2) labour-market or employment training, and (3) staff training. The recognition of the individual's previous learning linked with efforts to promote citizens' mobility in Europe and globally is the next challenge.

3. *Vocational Higher Education (Polytechnic Degree) (ISCED 5B)* reform has improved the standard of quality of vocational education corresponding to requirements of trade and industry and economic life, has enhanced the parity of esteem between vocational education and academic education, has made access to higher education from both academic and vocational upper secondary education, has diversified higher education provision, and has attempted to improve local economics by the regional and equal coverage of higher education.

A goal of the Government is to provide student places for around 70% of the average 19 to 21 year old group in higher education. In 2002, 69.5% of those who entered polytechnics had completed general upper secondary school and 29.5% completed vocational upper secondary education. Vocational higher education (polytechnics) provides more student places than universities.

The massive vocational higher education (polytechnics, in Finnish AMK colleges) reform may be seen as a series of innovations focusing on the development of new kinds of tertiary education institutions. The means used to create these institutions included extending the length of studies from 2 to 3 years (the norm for colleges) to 3.5 to 4.5 years which is now characteristic of AMK institutions. Polytechnic education degrees (AMK degrees) are currently baccalaureate level. Regionality is characterized by close linkages with local workforce needs and the development of regional economic structure. AMK colleges also engage in research and development by providing for the needs of product development in local industries and businesses.

Drivers of the TVET Reforms and Challenges of Implementation in Finland

The vocational education reforms implemented in Finland in the late 1990s were an attempt to respond to the anticipated trends in the labour market and in organisation of work, and to individual learners' demands. Changes in the content of work, the introduction of new technologies, current forms of occupational mobility, and the rate of change in itself have

been considered to require employees who are more adaptable and able to acquire, in the future, new and applied skills and knowledge.

There has been a search for means of improving cooperation between education and working life. What led to the reform of workplace learning was joint recognition of the following problems among employers, trade unions and education administrators:

- 1) Curricula had been developed without co-operation with employers and enterprises.
- 2) Education and qualifications, on the one hand, and work and the required competencies on the other, had evolved and was developed separately (and not always along the same lines).
- 3) Despite good facilities, the school-based learning environments designed to simulate real life was unable to generate instruction as authentic as that provided through social interaction in the workplace or familiarise students with the occupational structures involved as intimately as practical experience at actual workplaces.
- 4) School-centered education was alleged to make young people's transition to working life difficult. Unemployment rate among the population under 25 years old was high which carried a threat to lead to marginalisation.
- 5) Only school-based vocational education was considered costly.
- 6) The amount of esteem enjoyed by vocational education depended on its match with working life as well as on collaboration between education and working life.
- 7) The approaching retirement of the baby-boom generation and the emergence of new occupations and tasks have brought a labour shortage in about a decade. The employers wanted to seek the ways to recruit young people to their enterprises.

In addition to pressures from working life, today's school reforms have stemmed from new conceptions of learning. The curricula in TVET have been restructured and reformed twice during the last ten years.

According to the Finnish legislation, an objective of vocational education is to provide students with skills and knowledge needed to be able to act as an independent entrepreneur. The results one of my surveys revealed that the objectives set for self-employment might have been unrealistic. More than half the young people (54%) had never entertained the idea of setting up an enterprise of their own. Two out of ten have sometimes thought about doing so. About the same proportion (22.8%) of them has considered a private enterprise as a makeshift solution. A substantial number of the respondents (66.5%) judged that their work experience had done little to improve the skills needed in establishing an enterprise. Three informants under 30 years old (1%) had already worked as entrepreneurs (Lasonen 2001).

Perception of Reforms by Parties of the World of Work

The employers thought that co-operation with schools brought them more advantages than disadvantages. In 1999, seventy-five per cent of the managers were going to commit themselves to implementing workplace learning also in the future (Lasonen 2001). However, there was room for improvement in the co-operation between schools and enterprises to develop workplace learning activities. According to the employers, schools make little use of the companies' expertise. Similarly, co-operation could be planned better especially as

regards the students' personal study programmes and student self-assessment. The employers and the workplace instructors emphasised the importance of interaction for co-operation and network construction. Their responses indicated that the principles and goals of workplace learning receive little attention in the context of company-based activities.

The match between education and working life achieved within the research project was examined by comparing the employers' and the students' responses to the same set of questions, with the employers considering the skills and qualities needed in working life and the students those they were acquiring through their studies. In all, on the basis of the comparison the project seemed to have achieved a fairly good match between the education provided and the needs of working life. There were minor discrepancies between the skills required at work and those yielded by the students' education in areas such as the ability to use information sources and mastery of the theoretical basis of the given occupation, whereas the area of initiative, independent thinking and life management revealed a wider gap between the managers' skills requirements and the students' perceptions of their own training-delivered skill levels.

A CURRICULUM THEORY

Education is a process where the student is faced with the cultural environment and where s/he mentally adopts content. Curricula guide to choose the contents while planning the educational process. In Finland, *Core Framework Curriculum* refers to directives given by the National Board of Education. It included, before 1994, both the target-setting and the main contents of education and training for different levels and fields of primary and lower- and upper-secondary education. Since, the national core curricula concentrate mainly on the targeted results of learning and skills. Today *curriculum* is the document on which the syllabus of school is based. The municipality approves the curriculum and creates a common local part in it.

In the past Finland adopted three kinds of curriculum approaches: (1) peasants' education that was based on training hand, head and heart articulated by Uno Cygnaeus (1810-1888) who is known Father of the Finnish Folk School. He introduced handicrafts to school education as a compulsory subject. (2) 'Lehrplan' tradition associated with Herbart's (1776-1841) systematic syllabus emphasizing subjects and content. (3) Along with the student-centered movement in education and decentralisation brought the idea of the concept of curriculum (originating from the Latin word 'currere', to run) to the Finnish education and training system. The student-centered curriculum originated from John Dewey (1859-1952). The terms of 'Lehrplan' in German and 'curriculum' in English have the same meaning in Finnish 'opetussuunitelma'. Finland abandoned the centralized Herbartian Lehrplan-type national curriculum and adopted the Deweyan curriculum approach with its decentralized local school-based curricula in the 1990s. At the same time the societal meaning of education and schooling became more obvious and people were particularly aware of the power and influence pertaining to curricular planning. Curricula included measures for steering the instructional events, which was new in comparison to the earlier practice.

About the concepts of curriculum and didactics

The term 'curriculum' was introduced in German literature by Saul B. Robinsohn (1967), in his book "Bildungsreform als Revision des Curriculum". The term was borrowed from the Americans and came in handy at the time when the German school system needed a reform. Rather than on pedagogical or didactic grounds, the reform was motivated by social and political reasons. The model for curricular work also came from American education, which brought along, for instance, some terminological difficulties from the outset. Instructional and specifically curricular planning included all didactic elements from objectives to evaluation. The curricular perspective facilitated broad-based discussion concerning instructional contents and increasing the share of topical social and also scientific elements in the curriculum. The principles of curricular planning opened up a new outlook on school education.

A basic concept of the curricular approach is a learning objective, which refers specifically to goals set for student performance. Learning objectives serve as criteria for all didactic solutions, and also as starting points for instructional planning. This approach leans on the American goal taxonomies and on their way of categorising the objectives into cognitive, affective and psychomotoric ones and organising them into a hierarchy. Nowadays, the hierarchy actually serves as a logical classification principle rather than reflects the original idea of the actual order of learning.

In the planning of learning, the first phase aims at forming a set of objectives on the basis of which learning can then be organised. The objectives are selected stage by stage. First, a set of objectives, as large as possible, is collected for the period of instruction concerned, and also described so as to make clear what kind of performance each content item calls for from the student. Next, the objectives are sorted and organised to make clear what performance class and content category each one belongs to. Finally, a selection is made, with due justifications, choosing from among the collected, clearly described and organised objectives the particular ones that will be taken as goals for implementation.

The organisation of learning involves choosing or developing the teaching methods and media to be used so that the goals set can be achieved without any undesirable side effects. At this stage, planning draws on available research findings on different teaching methods. Finally, the stage of controlling the learning achievements reveals to what extent the objectives have been met.

The curriculum theory in its broad form relates more closely to long-term instructional planning and to programme design and development for the whole school system. This can involve a number of different views or schools of the curriculum theory. The broader perspective tends, however, to shift the focus away from the traditional didactic core issues to the backgrounds of curricular planning and development.

The conceptual content of didactics

Didactics as a concept originates from the German-speaking area. Its first occurrence can be traced back to the writings of Wolfgang Ratke and his colleagues in 1612-1613, after which it has eventually been established in wider use (Kansanen 1990). Outside the German-speaking area, however, the term has been rarely used or even unknown. In Nordic languages, e.g. in Norwegian and Swedish, the term is used obviously due to historical connections, but in Anglo-Saxon research, for instance, it is rare. It seems that the term 'didactics' is used increasingly also with reference to educational activities outside the formal school system, and this trend can be seen in Finland as well (e.g., adult didactics, didactics for leisure activities).

According to Kansanen (1990), the origin of the term 'didactics' is partly artificial; while it does have roots in Greek, the content is rather of a stipulatory origin. Originally didactics has referred to a particular method or system to be followed in teaching so as to achieve best results. For Ratke and Comenius, didactics included everything in the field of education, and in the spirit of that time didactics was purely an art of teaching with related value considerations and guidelines. However, in literature, didactics gets different dimensions according to the current points of interest. The basic term is didactics or general didactics, which was soon coupled with didactics for special purposes or subject-specific didactics. This latter term meant primarily didactics with specified contents, which has later been called subject didactics (e.g. didactics of music or of sport or of handicrafts or of mathematics or of mother tongue etc.).

Curricular planning and especially curricular development are broader concepts than the didactic viewpoint of education. Nonetheless, the actual curriculum, with all its contents and related theory constructions, is primarily didactic by nature. The curriculum theory has substituted didactics. Hence, for instance Klafki (1974) has drawn a parallel between curriculum and didactics, or rather, between the curriculum theory and didactics. According to Kansanen (1990), the curriculum theory has gradually lost ground and become, rather, just a component of different didactic systems.

Didactics is basically a normative system concerning instruction, and directs the teaching process in accordance with the value choices made for the objectives. These value choices are associated with goal setting, but they are also involved in stating the methodological and procedural instructions pertaining to the model. A didactic norm system provides a basis for curricula. The choices for curricular objectives can be identical with the didactic norm system, or match it only partly. A curriculum always has such an underlying norm system, be it recognised or not. By the same token, a didactic norm system is always based on an underlying, more general norm system, which in a way constitutes a basis for the didactic application.

We can therefore distinguish at least two kinds of normativeness in didactics: value choices in goal setting and methodological instructions in regulating the teaching process. Both can have a similar normative nature, but methodological instructions can also be based on

research findings, in which case normativeness is manifested in technological instructions or as prescriptiveness.

Scientific nature of didactic models and research on teaching and learning

Whether didactics can be regarded as a science, depends on the respective conception of science. Whatever the answer may be, it does not change the content of didactics nor its characteristics. The normativeness of didactics does not derive from any particular conception of science, whereas the position of didactics as a science indeed depends on this conception. The problem is, hence, to what extent the character of science allows normativeness. Quite evidently, there is a wide range of different views in this respect.

The descriptive side of educational events is mostly about pedagogical research. It does not include value choices for objectives, but pedagogical research operates within a given context of objectives in the broad sense. Whereas a curriculum is restricted, by goal setting, to a particular kind of teaching environment, pedagogical research has no such restrictions.

Pedagogical research extends thus across institutions, it can address any possible problems of teaching wherever and in whatever form they may appear.

The research of teaching provides a basis for theoretical constructions, while also offering stimuli for didactic norm systems, on the other hand. Same research findings can serve many parallel didactic norm systems and thereby contribute to curricular development. In a way, research findings get filtered through didactics into practice, a direct connection to practice is hard to conceive. Naturally, theories are constructed also in the fashion of rationalistic sciences by reflection, which in turn gives hints for the research of teaching.

The research of teaching is increasingly referred to as the science of teaching, which is logical. Analogically to pedagogy (what) and pedagogics (how to) we can talk about the science of teaching (what) and didactics (how to). Didactic models and the research models for teaching are fairly similar in terms of their structure when it comes to defining their structural components and analysing the relationships between those components. We can say that the research models, either, have not usually been able to avoid normativeness of a certain kind, but it is different from that of didactic models. By their basic orientation, the research models usually focus on effectiveness, which reveals that they will be eventually drawn on for some procedural instructions, as well. Nevertheless, the research models, as such, concentrate on describing the relationships between various components in the light of research findings, whereas in didactic models these relationships can be based on inferences, which also serve as a basis for instructions.

LEARNING AND TEACHING APPROACHES

The workplace learning scheme has a part of a quantitative and qualitative reform of upper-secondary-level vocational qualifications implemented since 1999 in Finland. Two-year study programmes, which constituted roughly a third of all vocational qualifications, were extended to three-year programmes. Now all upper secondary and higher education vocational

qualifications include a minimum of six months' workplace learning period to be done at enterprises or other appropriate workplaces. The goals of the workplace learning reform have been assumed to improve accountability of vocational education and training and to support lifelong learning by narrowing the gap between formal and informal education. One of my studies investigated, which competences did the students, in their own estimation, learn best during the workplace training period organised by their school, and which ones during their first year in working life after graduation. The respondents thought that working had developed their internal entrepreneurial and social skills, expertise and identity considerably more than their problem-solving skills, skills to evaluate one's own work, and planning skills. In the young people's opinion, the skills belonging to the latter group had developed less after their transition to working life than during the supervised work-based learning period included in their school-based studies. The effectiveness of workplace learning is the nature and quality of the supervision and mentoring that the students are offered at the enterprises.

The young people who had entered working life seemed to consider a job simply as a job, no longer a place where they consciously thought about or pursued purposeful learning. However, most of them wanted to develop their occupational skills and displayed a positive attitude towards addressing possible changes (Lasonen 2005). Perception of lifelong learning may concern formal education rather than informal training.

Approaches of Learning at Work

The theoretical foundations of learning at work are grounded on constructivist, contextual, situated and experiential learning, collaborative learning and problem-centered learning. These schools differ among other things in their emphasis on either largely epistemological starting points or on the practical problems of organising learning.

Constructivism is an epistemological interpretation of the nature of knowledge and of the process of human knowledge acquisition. According to the constructivist conception of knowledge, knowledge is not an objective reflection of reality transferable as such. Instead, it is always something constructed by an individual and a social community in interaction (Bruner, 1990). Learning is the active cognitive and social activity of the learner where they engage in the continuous construction of their picture of the world and its phenomena, interpreting new information on the basis of their previous knowledge, conceptions and beliefs. Learning reshapes an individual's conceptions. The constructivist theories emphasize experiences, collaboration, problem solving and contextual aspect of learning, and they comprise radical, cognitive and socio-cognitive wings.

The model of experiential learning as put forward by Kolb (1984) is based on constructivism, linked to it through the concepts of experience and reflection. Among his predecessors as developers of experiential learning are John Dewey, Kurt Lewin and Jean Piaget. Kolb's model of learning starts from concrete experience, which links observation with reflection; reflection generates solutions that are then tested in new situations, and the whole process ends with new, possibly altered experience. In Kolb's model each stage represents a distinctive type of adjustment to reality that presupposes distinct abilities and competencies. Learners need at least four kinds of competency, capabilities required for concrete

experience, reflective observation, abstract conceptualisation and active experimenting. Learning through experience includes the ways and processes of metacognition and collaboration.

Schön (1983) considers reflection a central element of the learning process. According to them, in the context of learning reflectivity can be defined as an overarching concept covering those intellectual and affective activities where the individual examines their experiences as they seek to reach a new area of understanding. The development of reflection skills presupposes metacognitive knowledge.

Metacognitions are linked with self-regulation, needed in lifelong learning. People can set themselves aims, select appropriate strategies and assess their own learning by possessing metacognitive skills. Metacognitions are knowledge about cognition and regulation of cognition (Eraut 1999). Metacognitive knowledge involves the individual's conscious conception of themselves as a learner, being aware of one's own schemes, strategies and processes. One aspect of this is a consideration of how the amount and quality of one's knowledge affect one's performance and mastery of a task.

Metacognitions are developed through self-evaluation. Self-evaluation is a part of self-regulated learning where the learners themselves assume responsibilities for consciously setting the goals on which the assessment of their learning will be based. This, again, presupposes mastery of reflective thinking and a functioning inner system of controls. The conscious and critical examination of one's own thinking and actions is linked with metacognitive and reflective skills. Self-regulated learning is most successful when it is implemented in the work community together with and supported by various facilitators, such as mentors and tutors.

Studies of collaborative learning consider the process of constructing knowledge in terms of the solution of concrete problems. Collaborative learning is not seen as merely a tool of individual knowledge construction but as an independent working method in itself. At workplaces it may be manifested in teamwork. Collaborative learning is about constructing shared meanings and shared understanding through collaboration and interaction with other people. Collaborative learning represents a culture of knowledge construction and development where learning means a growing ability to take part in the activities of a community of learners more extensive than a small group (Ellström 1999). Learning situations are collaborative if peers are about at the same level and can perform the same actions, have a common goal, and work together.

Wenger (1998) has described the learning process as appropriate participation that enables the individual to acquire knowledge and skills and increases their understanding through contact with experienced people. She approaches work-based learning from a socio-cultural perspective. Learning in any form changes our view of who we are through transforming our ability to participate, to belong and to negotiate meaning. Learning occurs in groups and communities through interaction, talk, participation and negotiations. Components of the social theory of learning according to her consist of:

- learning as belonging - community
- learning as doing – practice
- learning as becoming – identity
- learning as experience – meaning

Individuals are members and participants of communities and organisations. Joint participation contributes to share knowledge construction involving norms and values of communities. Each member of work teams is shaping the cultural dimensions of professional community and sector. Lave and Wenger (1991) further developed situated learning approach that has been utilised in reforming authentic and work-based student assessment. Learning and assessment occur in the communities of practices, in real social interaction with authentic working environments.

Activity Theory and Theory of Expansive Learning

Activity theory conceptualises individual and collective practices as developmental processes in which human activities normally takes place (Engeström 1987; Leont'ev, 1978). The idea of studying human activities as developmental processes is crucial for identifying changes and contradictions that exist in an activity. Therefore, contradictions serve as the means by which new knowledge about the activity emerges (Engeström, 1987). According to Leont'ev (1978), the *concept of activity* entails a complete system of human practices. Engeström (1987) conceptualised a representational model to portray the following elements of an activity system: Subjects, object, processes, tools, rules, division of labour, community of practices transformation, and outcomes.

The activity system outlines the various components of an activity system into a unified whole. Participants in an activity are portrayed as *subjects* interacting with *objects* to achieve desired *outcomes*. In the meanwhile, human interactions with each other and with objects of the environment are mediated through the use of *tools*, *rules* and *division of labour*. Mediators represent the nature of relationships that exist *within* and *between* participants of an activity in a given *community* of practices. This approach to modeling various aspects of human activity draws the researcher's attention to factors to consider when developing a learning system.

The pedagogical stance of the activity-theoretical concept of *expansive learning* differs from traditional types of learning in that:

- 1) the contents and outcomes of learning are not merely knowledge in texts and the heads of students but new forms of practical activity and artifacts constructed by students and teachers in the process of tackling real-life projects or problems that is learning what is not yet known.
- 2) learning is driven by genuine developmental needs in human practices and institutions, manifested in disturbances, breakdowns, problems, and episodes of questioning the existing practice.
- 3) learning proceeds through complex cycles of learning actions in which new objects and motives are created and implemented, opening up wider possibilities for participants

involved in that activity. This perspective on teaching and learning highlights the potential impact of new tools as vehicles for transforming activity procedures.

Activity is collective and systemic formation that has a complex mediational structure. An activity system produces actions and is realized by means of actions. An activity system does not exist in a vacuum. It interacts with a network of other activity systems.

FROM ENVIRONMENT EDUCATION TO EDUCATION FOR SUSTAINABLE DEVELOPMENT

The Earth Summit adopted Agenda 21, a comprehensive blueprint for actions leading to sustainable development, including detailed work plans, goals, responsibilities, and estimated for funding. Today the notion of sustainable development includes ecological, economic and social sustainability. According to UNESCO (2005), education for sustainable development comprise:

- 1) socio-cultural perspective (peace and human security, gender equality, cultural diversity and intercultural understanding, health, HIV/AIDS and governance);
- 2) environmental perspective (natural resources such as water, energy, agriculture and biodiversity, climate change, rural development, sustainable urbanization, and disaster prevention and mitigation); and
- 3) economic perspectives (poverty reduction, corporate responsibility and accountability, and market economy).

Education for sustainable development covers formal and non-formal education, local civil society, media and workplaces. Especially the role of higher education is essential in educating professionals and producing new knowledge through research on sustainable development. The United Nations Decade of Education for Sustainable Development says the foundation to reform and mobilize education at all levels, from elementary schools to universities, in support of sustainable development.

Education aims at what is good and valuable, and is therefore inherently normative, as it seeks to convey something that is considered objectively valuable, such as education for sustainable development. Normative values education entails belief in the existence of objective values. For example, the notions of justice, truth, and good are there, irrespective of one's personal valuations. Granting that objective values do exist, statements concerning these values can be either true or false. Prevailing values in society as well as those of individual persons may be inconsistent with objective values. In the field of education we need to justify why it is necessary to teach the particular, given values, such as sustainability, peace, democracy and multiculturalism. Education for sustainable development can aim at promoting global values. Every body has a right to have the healthy environment and clean water. A base of sustainable development comes from the UN (United Nations) Declaration of Human Rights.

Transform from Environmental Education (EE) to Education for Sustainable Development (ESD)

The World Commission on Environment and Development (WCED) published *Our Common Future* in 1987. The report introduced the concepts of ‘sustainable development’ and ‘sustainability’. In the report, sustainable development referred to “meeting the needs of the present generation without compromising the ability of future generations to meet their own needs” (WCED 1987, p. 1). In many countries, a lot of efforts have been undertaken to put this concept into practice. During the Rio Earth Summit in 1992, Agenda 21, the global action plan was developed. Agenda 21 has provided an important starting point for the regional, national and local governments to guide and initiate sustainability projects all over the world.

Debates of the issues related to North-South dimension, changes in production and consumption models and local solutions have shifted an emphasis on sustainable development since the 1980s. Environment education after the 1992 Rio Summit has been conceptualised as education for sustainability emphasising fair and equitable global distribution. Raimolin (2001, p. 25) has compared environmental education (EE) and education for sustainable development (ESD) and the differences in focus:

EE	ESD
Local/international problems	Global problems
Conservation and pollution	Sustainable development
Curriculum and teaching methods	Ecological school
Environmental values and attitudes	New cosmovisions
Eco-citizen	New civilisation

The 2002 Johannesburg World Summit on Sustainable Development emphasized that there is still a lot to do for sustainability. The focus was set on policies to integrated sustainable development into all disciplines at every level of society. Education was placed as one of the top priorities for the advancement of sustainable development. Education and training in each education system was seen necessary to be reoriented to increase awareness, understanding and support for sustainable development (Johannesburg Summit, 2002). Among others, the Government of Finland is committed to integrate sustainable development into its decision-making process to ensure so that social, economic and environmental implications are considered in the development of different national programmes, products and services Ympäristöministeriö, 1998). In the Finnish education system, sustainable development has been a core goal and curriculum objective since 1980’s.

UNESCO, being an active initiator from the very beginning, has drafted a comprehensive implementation scheme for education for sustainable development based on Agenda 21 (UNESCO, 2005). UNESCO has also launched the *United Nations Decade of Education for Sustainable Development 2005-2014* based on the resolution of the 57th meeting on the United Nations General Assembly in December 2002. “Education for sustainable development is fundamentally about values, with respect at the centre: respect for others,

including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit... The goal of the Decade of Education for Sustainable Development is to integrate the values inherent in sustainable development into all aspects of learning to encourage changes in behaviour that allow for a more sustainable and just society for all” (UNESCO 2005, p. 5). Sustainable development consists of society, environment and economy with culture as an underlying dimension.

Evaluation of Education for Sustainable Development

Yet education for sustainable development has many challenges. One of them is to bring it from systemic thinking into practical contexts. From this perspective, Fullan (2005) defines:

“Sustainability is the capacity of a system to engage in the complexities of continuous improvement consistent with deep values of human purpose” (p. iv). The eight elements of sustainability, that bring the principle to the practice, are as follows: (1) public service with a moral purpose, (2) commitment to changing context at all levels, (3) lateral capacity building through networks, (4) intelligent accountability and vertical relationships, (5) deep learning, (6) dual commitment to short-term and long-term results, (7) cycling energizing, and (8) the long lever of leadership (Fullan, 2005).

Education for sustainable development has been incorporated into school and college activities. For example in Finland, the National Board of Education has provided the guidelines of environmental quality criteria and of sustainable development auditing instructions for the educational institutions (Hyytiäinen, Hämeenoja, Hänninen, Leinonen & Tenhunen 1999; Opetushallitus 2003). Education for sustainable development changes the objectives of teaching and learning. According to Raumolin (2001, p. 2), “In addition to curricula and pedagogics, special stress should be laid on school metabolism, transport issues, socio-economic health, and integration into the community as well as the Agenda 21 and provincial, national, regional and global networking.”

Rajakorpi and Rajakorpi (2001) evaluated the Finnish educational institutions to what extent education for sustainable development was implemented in curricula, teaching and everyday activities among elementary, secondary and adult education schools (n=429). The parameters that measured the principles of sustainable development were developed in the study. The results of the evaluation revealed that sustainable development was implemented both in curricula, teaching and everyday activities fairly well assessed by personnel groups. Vocational schools were found to be far ahead both in teaching curricula and in their practical actions compared with the other schools.

An Approach of Environmental Ethics

Where should we look for keys to solve current ecological problems? Does the Western ideological heritage offer any basis for environmental ethics? Or is the Western culture so profoundly anthropocentric that we should reject old collective premises and start constructing a moral system of a new kind? According to White (1967), Western ideological history contains but few features that would support, by their historical value, the

development of environmental ethics and help justify environmental protection efforts and ecological adjustment of practices. The lack of environmental ethical restrictions has first caused an environmental crisis and then made it worse and worse, since western people have in practice had few inhibitions for their actions in nature. Because the western heritage in terms of worldview is so strongly dominated by Hellenistic, Jewish and Christian views, the criticism has also targeted at these cultural traditions.

John Passmore, an Australian researcher of the history of philosophy is often referred to as one of the first philosophers to write a philosophical monograph about an environmental issue, *Man's Responsibility for Nature: Ecological Problems and Western Traditions* (1974). Passmore (1974) distinguishes between the despotic and the stewardship traditions in relation to nature – both traditions are present in the Christian western history. The despotic approach has been predominant and the environmental crisis. Passmore notes that the western cultural tradition includes aspects which, when highlighted, could help find a philosophical solution to environmental problems in harmony with the traditions. 'A new ethical view' is not necessary in the same sense as a new coat – a new ethics need to be based on something pre-existing. The solution lies in a more general adherence to a perfectly familiar ethic and that ordinary moral, without any amendments, is enough to justify our ecological concerns and demands for action against those responsible for pollution, over-exploitation of natural resources, and destruction of species and wildlife.

According to Oksanen and Rauhala-Hayas (1997) it is clear that the compromise resolution Passmore proposes as a wise, well-considered, problem-aware theory that would also take account of the needs of future generations will not satisfy an ecocentrist. This is the case, although their practical demands would, after all, be quite compatible. Nonetheless, Passmore's notion that the community of humans and other living things has no such quality that would imply any moral rights or obligations certainly poses a challenge to the ecocentric environmental ethics.

Oksanen et al. continues that the history of ideas perspective has sometimes been called idealistic, because it emphasises the meaning of ideas and ideologies as factors explaining the changes in nature as a result of human activity. Correspondingly, a solution to the environmental crisis could be found from changing the worldview of people. Do attitudes really play so important a role in cultural development, or are they, rather, just secondary and explanatory variables? The so-called materialistic or socio-economic approach considers people's attitudes secondary. This kind of environmental history approach sees human ecological and related economic activity as primary, before factors pertinent to ideas and ideologies. The descriptions of such activity put special emphasis on various economic practices and structures by which environmental problems can be explained. Socio-economic phenomena such as urbanisation, increased prosperity, population growth, private or state ownership of natural resources, or technological development are seen as the actual causes for problems and the way of thinking that is making them worse. Hence, also the key to the solution must lie in social change. What people are doing to nature and what kind of attitudes they hold towards nature need to be understood as a result from various social if not even natural historical processes.

Another Australian philosopher Richard Routley (1994) criticises western thinking for its ecological illiteracy and considers the dominant western view simply incompatible with environmental ethics. He sees that the traditional view entails almost no restrictions whatsoever as to how nature can be treated, whereas environmental ethics provides that some restrictions must be accepted and adopted. In the traditional view the restriction is anthropocentric, i.e. it forbids such actions toward nature that could be harmful to the people directly involved or to other people. Routley, however, finds sticking to such a principle as human chauvinism. The concept of human chauvinism is slightly less common than the synonymous term “speciesism” in literature dealing with the scope of moral. Both terms refer to unjustified discrimination in favour of human characteristics. Elsewhere Routley has defined human chauvinism as essentially discriminating, unjust, and degrading treatment of other species by humans, for which there is no justification. Routley (1994) calls his alternative view as the deep-green theory.

In philosophical, political and judicial thinking the concept of rights has particular historical roots and connections to certain political ideals, which are mostly individualistic (Oksanen & Rauhala-Hayes, 1997). Although we can talk about the sovereignty of nations, particular rights are attributed mostly to individuals. Not anyone is entitled to such rights, however, but only those who meet certain criteria. Many philosophers, including many important environmental philosophers, regard that a good criterion for holding rights is that the being is a person, i.e. has a personality or identity. In this sense, the term 'person' refers to all such beings who are conscious of both the external reality and themselves, who are able to understand different values and to direct their own lives on the basis of the values they have chosen and to make spontaneous decisions. If these criteria are set for holding rights, animals and other possible right-holders should be seen quite human-like, similar to an adult human being. But because they, like also some people, do not naturally have all the qualities of (ideal) human adults, the question remains in what sense these borderline cases do have rights. Hence, the key question is what kind of moral status those creatures have which are not persons in this moral sense, but whose treatment can be evaluated on moral grounds.

Challenges for Teaching and Learning

The pursuit of good life and good deeds are also realised in practice. John Dewey (1916) was characterised by his developmental optimism, his belief in the ethical development of communities and collaborative problem solving. According to this developmental optimism, cultures evolve all the time, increasing their moral level along with rational problem solving. Dewey's ethical and epistemological thinking accentuated consideration of the situation and context of operation. Judgments about their justification should be drawn with relation to the particular context of operation.

Reflective and experiential aspects are essential in the process of education. Educational methodology, dialogue and interaction as well as problem-oriented collaboration can provide chances for experiential and reflective learning. Communication helps create a shared world of meanings in sustainable education. Communities play an important role in individuals' development process, as this development is integrated with communal problem solving,

especially with resolution of value conflicts and ensuring sustained operation, for instance, in environment protection.

Reflectivity implies that conventional thinking and work patterns and their justifications are regularly questioned in the activities, and new and better-justified approaches are sought for so as to deal with emerging problems. Reflectivity is connected with individual's lifelong growth process, and the development of reflective skills also brings along emancipation and independence. Communication is instrumental in the justification of shared norms and thus in the construction of any democratic community. Different parties' commitment to collaboration in practice is a prerequisite for successful operation.

The critical view of education for sustainable development leans on the theories of critical sociology and critical pedagogy (Freire, 1969; Giroux and MacLaren, 1994). Critical education for sustainable development is a way to perceive the world and to understand dissimilarity and 'alienate' as products of history, culture, power and ideology. The equality of human beings is discussed by looking at the existence of ethnic identities and cultural differences and their prospects in the changing world. As regards educational practice, critical analysis targets at the ways school tends to keep up and produce, through its disguised curriculum, for example, such categories and labels as sex, social class, race, language and disability. The critical view also seeks to find remedies for inequity.

Culture can be defined as an integration of the learnt behaviours and related products characteristic of a particular community of people. Culture is transmitted and survives only through communication and learning. It can also be regarded as a holistic constructive-symbolic system that is fundamental to human identity, thinking, and learning. Reality is composed of shared symbols and tacit agreements, values, interpretations and mental images about the world we live in. The cultural formula is both a representation of reality and a model for meeting this reality.

Education for sustainable development is culture-bound. Schools and homes as well as teachers and students as individuals represent different views of values, norms and lifestyles that have impact on environment.

ANTICIPATION OF FUTURE EDUCATIONAL AND WORKFORCE NEEDS

Planning for educational provision and the development of educational contents require estimation or anticipation of future needs for education and workforce. Educational anticipation contributes to education policy strategies and decisions and it has often very long-ranging effects. Successful anticipation calls for thorough groundwork and adequate methods. Yet, sudden fluctuations are not susceptible to such advance estimation (Ministry of Labour 2003).

In Finland, the year 2005 was the first year showing a decline in labour force; more people left the workforce than came in. In fact, our labour force will be decreasing in the next decade with an annual rate of approximately 10,000 persons. The scant workforce and possible labour shortage call for even more careful anticipation and planning with respect to the

quality and quantity of future educational provision. Also globalisation and changes in the international division of labour need to be taken into account. The population of Finland is expected to grow until the year 2020, but at the same time the population is rapidly ageing. Younger age groups are diminishing, whereas the number of over 55-year-olds is increasing. This is, indeed, one of the key changes to be considered in educational anticipation.

Educational anticipation operates on a long-term basis, since due to the lengthy educational programmes it may easily take some 5-8 years before the decisions on changes are carried through in full and new graduates will be entering the labour market. Besides, each new cohort will stay in the workforce for decades. An adequate range when considering basic education for the youth, in particular, is usually about 10-15 years, while a shorter span may be feasible for further education and upgrading programmes for adults. It is impossible to foresee all developments, however. The national development plan for education and research, which is revised and approved by the Government every four years, defines central policy lines regarding the qualitative, quantitative and structural aspects. The development plan includes, for example, quantitative objectives for educational provision.

Presently, a project titled "Educational provision 2012" has been set out to prepare a preliminary proposal on the objectives for educational provision to be included in the development plan for the period 2007-2012 (see Table 1).

Table 1: Workforce Needs by Occupational Field in Finland in 2000-2020 (Ministry of Labour 2003, p. 57)

Occupational Fields	Five-year Period				2005-2020
	2000-05	2005-10	2010-15	2015-20	
Total	353790	308360	301650	280610	890620
Agriculture and Forestry	15010	11590	16920	12260	40770
Manufacturing	51020	46750	42980	29900	119630
Construction	2440	2480	3570	410	6460
Transportation	10980	11100	9700	8220	29020
Business and Marketing	41070	31270	20750	20230	72250
Public Services	68360	51940	60430	60170	172540
Technical Management and Consultation	42280	47920	44590	40420	132930
Business and Administration Leadership and Expert Work	60800	59510	57960	54070	171540
Cultural Services	28850	30630	30210	46130	106970
Secretarial Services	23930	10740	11220	6000	27960
Information Technology	9050	4430	3320	2800	10550

The proposal will define national and regional objectives for entrance and entrants by educational fields and sectors, and for youth and adult education. Special attention will be paid to the need for new educated workforce in the period 2015-2020, when the new cohort to come in upper secondary and higher education in 2012 will be entering the labour market. The anticipatory model will be adjusted so as to link it better with regional estimation and to take also adults' educational needs and the provision of adult education into consideration. One starting point is a recent report by the Ministry of Education (2005) on the regional

action plans of adult education, which also include reviews on the educational needs of the business and industries and adult population in each region as well as on relevant educational provision and related development.

The Educational provision 2012 project will also evaluate the needs for revising the objectives defined in the current Development plan for education and research. This interim review will be strongly influenced by the findings of another project, Workforce 2025, about possible need to adjust earlier estimations due to the developments in the economy and labour force in recent years. The Ministry of Education and regional state offices have agreed that the state offices together with regional councils will draft, by the end of September 2006, regional development reviews. The Educational provision 2012 project will be contributed, among others, by educational authorities, the Ministry of the Interior, the Ministry of Labour, regional councils, the Association of Finnish Local and Regional Authorities, central labour market organisations, the Central Union of Agricultural Producers and Forest Owners, the Federation of Finnish Enterprises, the Research Institute of the Finnish Economy, the Labour Institute for Economic Research, and Statistics Finland.

CONCLUSIONS

In addition to pressures from working life, today's school reforms have stemmed from new conceptions of learning and educating the character and whole personality. It is believed that enriching traditional approaches favoured in education with modern conceptions and alternative forms of learning will produce citizens who adjust flexibly to changes and are independent but cooperative and solve problems. Young employees working in complex work communities need planning skills, resource, a positive attitude to continuous studying and learning, cooperation and communication skills and reflective judgment in addition to domain-specific skills.

When analysing different curriculum and didactic schools and traditions, we also have to bear in mind the societal context in which they have evolved as well as the prevailing scientific conceptions and paradigms, which these new approaches have raised to challenge. In the field of education and training the obligation or the right of goal setting, in particular, is a crucial factor. The didactic models can include programmes, goals, and curricula of their own as long as they meet certain formal requirements of society. The didactic models are competing in all sectors of instruction, education and training concerning the whole range from educational and training goal setting up to the outcomes.

The status of vocational education is closely linked with improvements in the quality of education and training provision at the system, programme and curriculum levels. Unless there are qualitative improvements in vocational education, particularly as regards work-based training, it will be impossible to attract high achievers, incorporate work-based qualifications into an integrated education and training system and establish the overarching qualifications across educational tracks. Giving vocational and particularly work-based education higher status depends above all on qualitative improvements in educational contents and pedagogy (Lasonen & Manning, 2000). The purpose of this article is to assess

what young people had learnt best during the workplace training period of their studies, and what things during their first year in working life.

Today the notion of sustainable development includes ecological, economic, social and cultural sustainability (see Table 1). Especially cultural diversity and intercultural education contribute to the social and cultural aspects of sustainability. Responding to the challenge of ESD entails that education policy is based on the participation of the whole population: everyone should be aware of his/her own responsibility for creating a sustainable future in terms of ecology, economy, social relations and culture. The objectives for such education and training arise from the respective culture and local social, economic, environmental and cultural context. Nevertheless, the dimension of global sustainable development is taken into consideration in each country.

Table 2: Sustainable Development and Interculturality in TVET

TVET for Sustainable Development	Policies	Strategies for practice
Economic perspective	Global and regional economy, world market, changing work, consumerism, poverty reduction, gender equity, health care	Education and training for all, education system variables, peace education, conflict resolution, health education, global education
Ecological perspective	Ecological balance, biodiversity, sustainable futures	Environmental education, mutual respect and thrust, ecopedagogy
Socio-cultural perspective	Cultural diversity, identity issues, citizenship, free mobility, parity of esteem, equality	Education for cultural understanding, human rights education, questioning racism and stereotyping

Most countries have population with a rich variety of diverse ethnic groups and languages. Each of us belongs to an ethnic group. Modern communities are formed of different groups and communities that coexists side by side, within each other and one upon another having multiple and flexible identities. Some 200 countries of our world include about 5 000 ethnic groups many of whom are continuously moving from one place to another. Two thirds of the countries have more than one ethnic or religious group making up at least 10% of the population (UNDP 2004).

ESD refers to a vision and a dynamic process rather than to a precisely defined concept. The aim of sustainable development is *a* world where all people can choose themselves what kind of life they wish to live. Making such choices will become possible when the essential prerequisites for life are available to everyone. These essentials include good health, opportunity for education and free access to information, adequate standard of living and possibilities to maintain it, healthy environment, security and freedom, possibility to participate in and influence the life of the community, and general acceptance regardless of one's ethnic background, gender, age and religion. However, there exist disparities and inequalities between males and women and between different ethnic groups.

Education as a mean for sustainable development covers formal and non-formal education, local civil society, media and workplaces. Each country's capacity to move towards sustainable human development depends on the existence of skilled human resources in the scientific, technical and professional fields needed for addressing complex environment,

resources and development issues. Training of the right kind and number of scientists, experts, technicians and educational personnel is needed in the most of the countries. A high standard of education provides the means for innovations and for surviving in the changing world on the sustainable bases.

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