

In terms of APEC SCSC, we started discussion about education in 2005; and the SCSC agreed to take actions to promote the education activities in the region and to initiate a project for case studies and curricula development for member economies in 2006. Here are some historical highlights of the discussions and agreements and why APEC develops this education guideline:

- In September 2005, at the APEC SCSC II meeting, the APEC member economies recognized the importance of 'standards education' as a way to build national standards infrastructure and to narrow the gap in standards infrastructure among APEC economies. The SCSC agreed to continue to share information and experience on standards education in its future meetings.
- In February 2006, at the APEC SCSC I meeting, the SCSC agreed to take actions, to promote the inclusion of Standards and Conformity Assessment and related activities in the curricula of schools and universities in the APEC region. Where relevant, this would be done in conjunction with relevant APEC forums with responsibility for educational matters. The SCSC endorsed the funding proposal in principle and asked Korea to develop the project proposal taking account of the comments from member economies.
- In November 2006, APEC Ministers instructed the importance of standards education: "*the APEC Ministers recognized the importance of standards education and encouraged members to develop reference curricula and materials to address the significance of standards and conformance to trade facilitation in the region*" at the eighteenth APEC Ministerial Meeting.
- In November 2006, noting the Ministerial instruction, APEC SCSC reviewed its Terms of References and agreed to include 'promoting standards education activities to address the significance of standards and conformance in the region' as one of its long term objectives.

APEC SCSC has recognized that the formal education on standards and conformance is at its beginning stage and that guideline for the education policy and program is useful handbook for all member economies, particularly for developing economies.

However, this guideline do not attempt to provide a perfect model suitable for all economies whose conditions are diverse, but this guideline endeavors to provide realistic and investigative systematic information and to advise desirable framework and components, primarily focusing on formal education but not limited to, you could selectively use or refer to.

2. Methodology and Definitions

2.1. Methodology of Survey and Research

A combination of survey and research has been done to conduct case studies for standards education, by project editor of Korean Standards Association (KSA). The editor collected survey inputs from sixteen APEC SCSC member economies and other additional inputs from selected experts and institutions. The original survey template is attached as Annex A and key components of the survey are summarized in <Table 1>. Additionally, after completion of the survey, a research has been done to make the case studies complementary and comprehensive.

You should note that, to get appropriate information within limited time and resources, the survey and research do not collect industry/sector specific programs already well going (e.g. ISO 9000/14000 training programs), but gather information about the education programs on standards and conformance in general.

< Table 1 > Survey/Research Questionnaire

Classification	Questions	Detailed Items
Part I. National Strategy and Priority	1.1 National Strategy	1.1.1 Having strategy in general? 1.1.2 Having education strategy? 1.1.3 If having education strategy - Increase public awareness? - Facilitate professional education? - Facilitate formal education? - Build networking among stakeholders? - Develop web based database? 1.1.4 Contact points for education in general? 1.1.5 Plan to include education in strategy?
	1.2 National Strategy Committee	1.2.1 Having standardization committee? 1.2.2 Having standardization education committee? Work scope, objectives? 1.2.3 Contact points for the education committee?
	1.3 National Priority	Priority: Not Specified, Medium, High Activity: None, Plan, Developing,
Part II Experiences and Lessons Learned	2.1 List of Experiences	Completed or In-Operation in 2006~2007 - Operator, website, Title (program/project), Type(target groups), Note
	2.2 Fact Sheets of Experiences	Detailed information about the list of experiences - Title, weblink, Operator, Type(target groups), Learning objectives, Number of participants, Operation Summary, Textbook
	2.2A Lessons Learned	Lessons learned in planning or deploying education programs/projects - Title, Date, Context, Lessons, Source, Contact
	2.3 Important Literature	Relevant literature about standardization strategies, value, case studies, or textbook

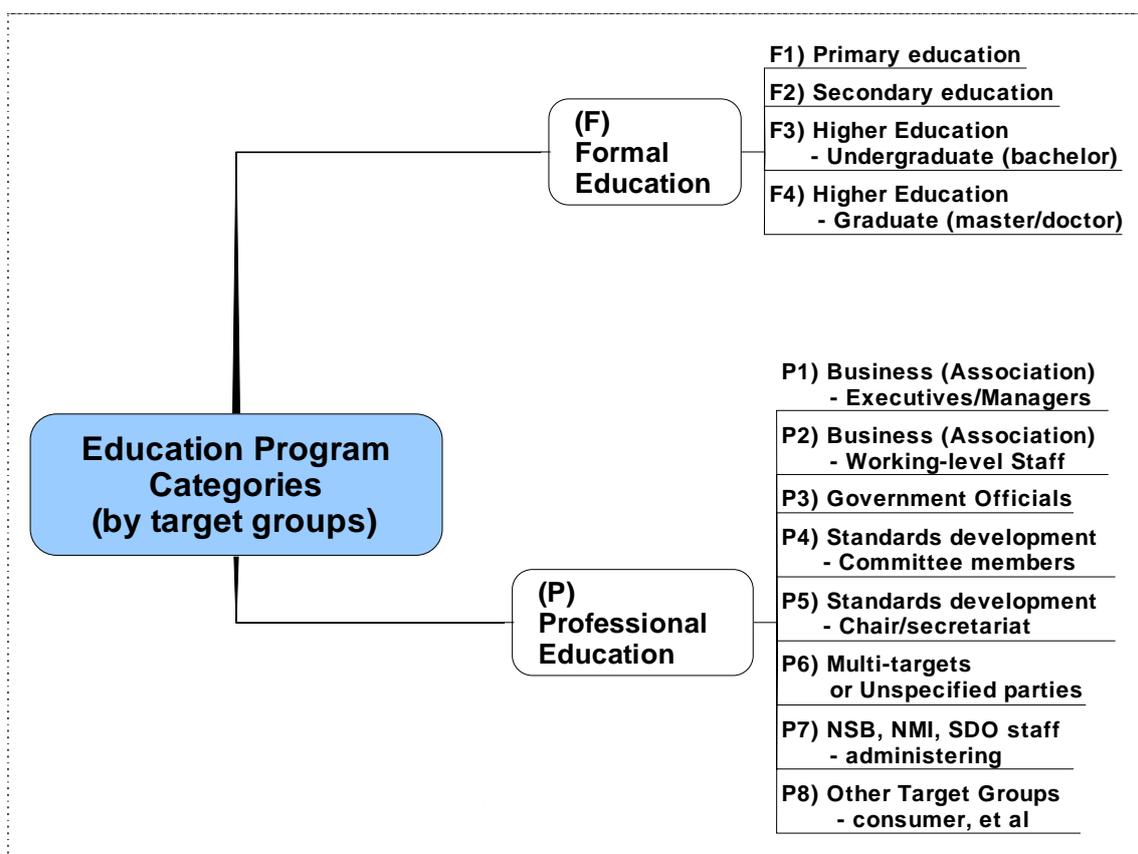
2.2. Categorization to Formal and Professional Education

For efficient case studies, we categorized the education programs by its target groups as describe in <Figure 2>. The two big categories are formal education (F) and professional education (P).

The formal education (F) is classified into four sub-categories: primary education (F1), secondary education (F2), higher education – undergraduate (bachelor) (F3), higher education – graduate (master/doctor) (F4).

The professional education(P), non-formal education or training, is classified into eight sub-categories: for Business (Association) Executives/Managers (P1), Business (Association) Working-level Staff (P2), Government Officials (P3), Standards development – Committee members (P4), Standards development – Committee chair/secretariat (P5), Multi-targets or Unspecified parties (P6), ISO NSB/NMI/SDO staff (P7), and Other Target Groups (P8).

Please note that the twelve abbreviated codes of (F1) ~ (F4) and (P1) ~ (P8) are broadly used in the most chapters of this guideline including the annexes.



<Figure 2> Classification of education programs

2.3. Terms

Formal education	Traditional or standardized education in schools or institutions for primary education, secondary education, and higher (tertiary) education.
Primary education	Primary education is the first stage of compulsory education. It is preceded by pre-school or nursery education and is followed by secondary education.
Secondary education	Secondary education is the stage of education following primary school. Secondary education is generally the final stage of compulsory education.
Higher education (tertiary education)	Higher or tertiary education is education provided by universities, vocational universities, community colleges, liberal arts colleges, technical colleges, and other collegial institutions that award academic degrees, such as career colleges. Higher education is normally taken to include undergraduate and (post)graduate education, while vocational education and training beyond secondary education is known as further education.
Undergraduate education	Undergraduate education is post-secondary education up to the level of a bachelor's degree.

(Post)Graduate education	(Post)Graduate education involves studying for degrees or other qualifications for which a first or Bachelor's degree is required, and the education for master's degree or doctorate in graduate school.
Professional education	In this guideline, professional education is non-formal education or training. Professional education is a response to society's demands for expert help provided by competent people.

2.4. Acronyms

A2LA	American Association for Laboratory Accreditation-
ADT	Advance Data Technology. LTD (Chinese Taipei)
ANSI	American National Standards Institute (USA)
APEC	Asia Pacific Economic Cooperation
APEC CTI	APEC Committee on Trade and Investment
APEC SCSC	APEC CTI Sub-Committee on Standards and Conformance
APEC SCSC PAGE	APEC CTI SCSC Project Advisory Group on Education
ASEM	Asia Europe Meeting
ASEM SCA	ASEM Standards and Conformity Assessment
ASTM	American Society for Testing and Materials
BSI	British Standards Institution (UK)
BSMI	Bureau of Standards, Metrology and Inspection (Chinese Taipei)
BSN	National Standardization Body (Indonesia)
CEN	European Committee for Standardization (Europe)
CJLU	China Jiliang University (China)
COPRAS	CO-operation Platform for Research And Standards (CEN)
CSA	Canadian Standards Association (Canada)
CPRU	Construction Planning and Research Unit (Brunei Darussalam)
DSM	Department of Standards Malaysia (Malaysia)
DTI	Department of Trade and industry (Philippines)
DTI BPS	Bureau of Product Standards (Philippines)
EURAS	European Academy for Standardization
HKSARG	Hong Kong Special Administrative Region (Hong Kong)
ICES	International Committee(Community) for Education about Standardization
IEC	International Electro-technical Commission
IFAN	International Federation of Standards Users

ISO	International Organizations for Standardization
ISO CS	ISO Central Secretariat
ISO DEVCO	ISO Committee on Developing Country Matters
ITC	Innovation and Technology Commission (Hong Kong)
ITU	International Telecommunication Union
JSA	Japanese Standards Association (Japan)
KATS	Korean Agency for Technology and Standards (Korea)
KSA	Korean Standards Association (Korea)
METI	Ministry of Economy, Trade and Industry (Japan)
MOT/MOI	Management of Technology/Innovation (in graduate education)
NCC	National Communications Commission (Chinese Taipei)
NII	National Information Infrastructure Enterprise Promotion Association (Chinese Taipei)
NMI	National Measurement/Metrology Institutes
NSB	National Standards Body (usually corresponding to ISO, IEC)
PSIB	Product Standards Information Bureau (Hong Kong)
SAC	Standardization Administration of the People's Republic of China (China)
SCC	Standards Council of Canada (China)
SDO	Standards Developing/Development Organizations
SES	Standards Engineering Society (based on USA)
SPRING	Standards, Productivity and Innovation Board (Singapore)
STAMEQ	Directorate for Standards and Quality (Vietnam)
TAF	Taiwan Accreditation Foundation (Chinese Taipei)
TISI	Thai Industrial Standards Institute (Thailand)
TSE	Turkish Standards Institution (Turkey)
TTA	Telecommunications Technology Association (Korea)
UEPS	University Education Program on Standards (Korea)
UL	Underwriters Laboratories Inc. (USA)
UNECE	United Economic Commission for Europe (UNECE)
UNCEC WP6	UNECE Working Party on Regulatory Cooperation and Standardization Policies

2.5. Structure of This Guideline

This chapter provides a quick structural overview of this guideline from chapter 3 to chapter 7. These chapters include findings from the case studies about strategy and priority (ch3), education programs or projects (ch.4), and consolidated lessons learned (ch.5), strategic curriculum model (ch.6), and summary conclusions (ch.7)

Chapter 3 (with Annex B) provides strategy and priority related information. It provides full/summary text of national strategy, surveyed priorities, and committee information which are based on survey responses from sixteen APEC economies. Its subchapter consists as follows:

- Chapter 3.1, 3.2: Fifteen strategies (full/summary text) and analysis
- Chapter 3.3: Surveyed Priorities to different types of education
- Chapter 3.4: Seven examples of committees in standards education

Chapter 4 (with Annex C and D) provides practices of education programs or projects world wide. It contains 118 lists of practices (cases) and 88 detailed information (fact sheets) as well as its analytical findings. Also, model curriculum is proposed for each target group. Some key figures are summarized below in <Table 2>.

< Table 2 > Number of Education Practices

Category	Survey	Research	Total	Chapter
General Activities	1 cases 1 fact sheets	15 cases 7 fact sheets	16 cases 8 fact sheets	chapter 4.1
Formal Education F1) Primary F2) Secondary	6 cases 5 fact sheets	4 cases 4 fact sheets	10 cases 9 fact sheets	chapter 4.2
Formal Education F3) Undergraduate F4) Graduate	19 cases 11 fact sheets	8 cases 8 fact sheets	27 cases 19 fact sheets	chapter 4.3
Professional Education P1) through P8)	32 cases 19 fact sheets	33 cases 33 fact sheets	65 cases 52 fact sheets	chapter 4.4

Chapter 5 (with Annex E) provides nineteen original lessons learned mostly from survey. The surveyed lessons are analyzed and regrouped by the editor for more comprehensive understanding.

Annex F lists up contact points from the survey. The contact information will be useful when policy makers want to have further information about specific economy or specific programs in this guideline.

Chapter 6, the climax of this guideline, presents a strategic curriculum model – why, what and how for standards education.

Chapter 7 provides an executive summary in policy development, education program planning and implementation in the form of recommendations.