Technology Education
Key Learning Area

Technology and Living
Curriculum and Assessment Guide (Secondary 4 - 6)

Jointly prepared by the Curriculum Development Council and
the Hong Kong Examinations and Assessment Authority

Recommended for use in schools by the Education Bureau
HKSARG
2007 (with updates in November 2015)

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Preamble

The Education and Manpower Bureau (EMB, now renamed Education Bureau (EDB)) stated in its report[1] in 2005 that the implementation of a three-year senior secondary academic structure would commence at Secondary 4 in September 2009. The senior secondary academic structure is supported by a flexible, coherent and diversified senior secondary curriculum aimed at catering for students' varied interests, needs and abilities. This Curriculum and Assessment (C&A) Guide is one of the series of documents prepared for the senior secondary curriculum. It is based on the goals of senior secondary education and on other official documents related to the curriculum and assessment reform since 2000, including the *Basic Education Curriculum Guide* (2002) and the *Senior Secondary Curriculum Guide* (2009). To gain a full understanding of the connection between education at the senior secondary level and other key stages, and how effective learning, teaching and assessment can be achieved, it is strongly recommended that reference should be made to all related documents.

This C&A Guide is designed to provide the rationale and aims of the subject curriculum, followed by chapters on the curriculum framework, curriculum planning, pedagogy, assessment and use of learning and teaching resources. One key concept underlying the senior secondary curriculum is that curriculum, pedagogy and assessment should be well aligned. While learning and teaching strategies form an integral part of the curriculum and are conducive to promoting learning to learn and whole-person development, assessment should also be recognised not only as a means to gauge performance but also to improve learning. To understand the interplay between these three key components, all chapters in the C&A Guide should be read in a holistic manner.

The C&A Guide was jointly prepared by the Curriculum Development Council (CDC) and the Hong Kong Examinations and Assessment Authority (HKEAA) in 2007. The first updating was made in January 2014 to align with the short-term recommendations made on the senior secondary curriculum and assessment resulting from the New Academic Structure (NAS) review so that students and teachers could benefit at the earliest possible instance. This updating is made to align with the medium-term recommendations of the NAS review made on curriculum and assessment. The CDC is an advisory body that gives recommendations to the HKSAR Government on all matters relating to curriculum development for the school system from kindergarten to senior secondary level. Its membership includes heads of schools, practising teachers, parents, employers, academics

[1] The report is *The New Academic Structure for Senior Secondary Education and Higher Education – Action Plan for Investing in the Future of Hong Kong*.

from tertiary institutions, professionals from related fields/bodies, representatives from the HKEAA and the Vocational Training Council (VTC), as well as officers from the Education Bureau. The HKEAA is an independent statutory body responsible for the conduct of public assessment, including the assessment for the Hong Kong Diploma of Secondary Education (HKDSE). Its governing council includes members drawn from the school sector, tertiary institutions and government bodies, as well as professionals and members of the business community.

The C&A Guide is recommended by the Education Bureau for use in secondary schools. The subject curriculum forms the basis of the assessment designed and administered by the HKEAA. In this connection, the HKEAA will issue a handbook to provide information on the rules and regulations of the HKDSE Examination as well as the structure and format of public assessment for each subject.

The CDC and HKEAA will keep the subject curriculum under constant review and evaluation in the light of classroom experiences, students' performance in the public assessment, and the changing needs of students and society. All comments and suggestions on this C&A Guide may be sent to:

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Acronym

ApL	Applied Learning
C&A	Curriculum and Assessment
CDC	Curriculum Development Council
EDB	Education Bureau
EMB	Education and Manpower Bureau
HKALE	Hong Kong Advanced Level Examination
HKDSE	Hong Kong Diploma of Secondary Education
HKEAA	Hong Kong Examinations and Assessment Authority
HKSAR	Hong Kong Special Administrative Region
IT	Information Technology
KLA	Key Learning Area
S1/2/3/4/5/6/7	Secondary 1/2/3/4/5/6/7
SBA	School-based Assessment
SSCG	Senior Secondary Curriculum Guide

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Chapter 1 Introduction

This chapter provides the background, rationale and aims of Technology and Living – Food Science and Technology (FST) / Fashion, Clothing and Textiles (FCT) as an elective subject in the three-year senior secondary curriculum, and highlights how it articulates with the junior secondary curriculum, post-secondary education, and future career pathways.

1.1 Background

Technology Education in the Hong Kong school curriculum focuses on how human beings solve their daily problems and how the processes involved can be replicated and transferred to solve new problems. It is an essential area of study for all students in Hong Kong.

In the 21st century, technology has become an integral part of our life. Citizens of today require much more than a basic ability to read, write, and do simple mathematics. To live in the modern world, we must understand how technology affects us. In this regard, we must be equipped to use technology effectively and flexibly to solve daily problems with positive attitude at home, in the community, and around the world; and to create new solutions, products, and services for the well-being of humankind.

By studying the related subjects developed in Technology Education Key Learning Area, our students will be better prepared to meet the uncertainties and challenges of the future with regard to social, economic, ecological, scientific and technological changes, both locally and globally. Their studies in this area will help them to lead a healthy lifestyle in adulthood and to contribute to building a caring and harmonious society.

Building on the strengths of the existing Technology Education curriculum and catering for social, economic and technological development, senior secondary Technology and Living is one of the five elective subjects in the Technology Education Key Learning Area in the senior secondary curriculum.

The *Senior Secondary Technology and Living Curriculum and Assessment Guide* incorporates the key recommendations made in the Curriculum Development Council's *Senior Secondary Curriculum Guide* (2009), *Technology Education Key Learning Area Curriculum Guide (Primary 1–Secondary 3)* (2002) and the final report on the Holistic Review of the School Curriculum *Learning to Learn – The Way Forward in Curriculum Development* (2001). The latter three documents outline the overall direction for both education and curriculum

development in Hong Kong and seek to promote the educational aims of lifelong learning and whole-person development.

1.2 Rationale

Food and Clothing are basic human necessities for survival and protection. They are also an integral part of life reflecting humankind's historical, cultural, social, economic, scientific and technological developments and changing lifestyles throughout the centuries and around the world.

In recent decades, advances in science and technology (e.g. information technology (IT), food technology and textile technology), the emphasis on a knowledge-based economy / society and globalization have had a far-reaching impact, direct and indirect, on the home, family, school, community, work, society and the world at large. They have affected our values, beliefs, daily lifestyle and how we interpret what quality of life means. These developments will continue to bring new challenges and lead us to review the way we live, our traditional family values and relations, how and why we eat and dress, how to act responsibly as a citizen, protect the environment and make wise choices for health, fitness and beauty, etc.

To respond to all these complex demands, we need to foster the following qualities in our students and future generations: positive values and attitudes (e.g. moral, social and environmental consciousness) towards working for the well-being of humankind; the knowledge base and skills to cope with uncertainty; and a critical mind for analysing complex and conflicting issues, making informed and responsible decisions, and creating sensible solutions to solve problems.

Senior secondary Technology and Living promotes the well-being of individuals, families, societies and the world as a whole through the study of contemporary issues and concerns related to food or clothing from different perspectives, as well as promoting effective resource management. Well-being is a dynamic phenomenon which incorporates every aspect of human experience, including the physical, social, cultural, emotional, spiritual, economic, political and environmental dimensions of life, all of which differ across communities and cultures and are ever-changing.

To provide a range of pathways for students with different aptitudes, two areas of study important for lifelong learning are included: food, under the title "Food Science and Technology (FST) Strand"; and clothing, under the title "Fashion, Clothing and Textiles (FCT) Strand". The understanding and application of the knowledge, concepts and skills acquired

throughout the course of study will equip students with the means to pursue quality of life in adulthood and to move towards further academic or career oriented studies.

1.3 Curriculum Aims

The aims of the senior secondary Technology and Living curriculum are to enable students to:

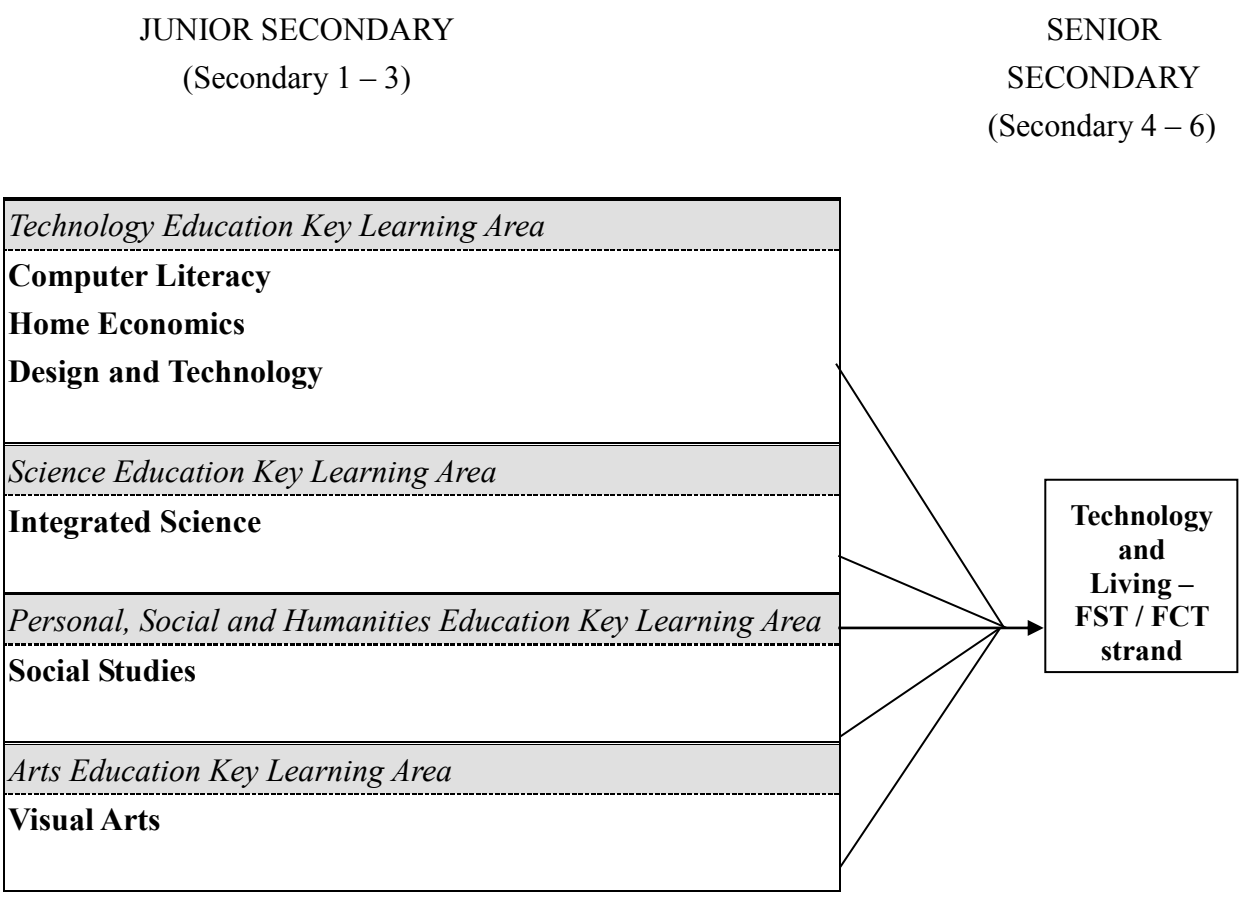
- develop positive attitudes and values for the well-being of their families and society as a whole
- be responsible citizens and informed consumers, willing to contribute to the well-being of individuals, families and society
- demonstrate good use of management and organisational skills in handling physical and socio-economic resources for individuals, families, the community and society as a whole
- analyse contextual factors contributing to the well-being of the individual, family and society, by applying knowledge from the Food Science and Technology strand or the Fashion, Clothing and Textiles strand
- devise and implement strategies independently to solve complicated problems in technological contexts, in particular food / fashion, using a range of appropriate techniques and procedures
- evaluate critically the impact of social, cultural, economic, scientific and technological developments on the well-being of individuals, families and society as a whole
- further their studies and lifelong learning in food or fashion-related fields

1.4 Interface with Junior Secondary Curriculum and Post-secondary Pathways

Home Economics is one of the subjects in the Technology Education Key Learning Area (TEKLA) at junior secondary level. It comprises major areas of study on food, clothing, home and family which intertwine with the six knowledge contexts proposed in the *Technology Education Key Learning Area Curriculum Guide (Primary 1–Secondary 3)* (2002). The six knowledge contexts are: Information and Communication Technology, Materials and Structures, Operations and Manufacturing, Strategies and Management, Systems and Control as well as Technology and Living.

The knowledge and skills that students learned across the following Key Learning Areas at junior secondary level lay the basis for deeper study of related subjects in the senior secondary curriculum. A general, though not exhaustive, picture is given as follows:

Figure 1.1 Interface with junior secondary curriculum and senior secondary Technology and Living

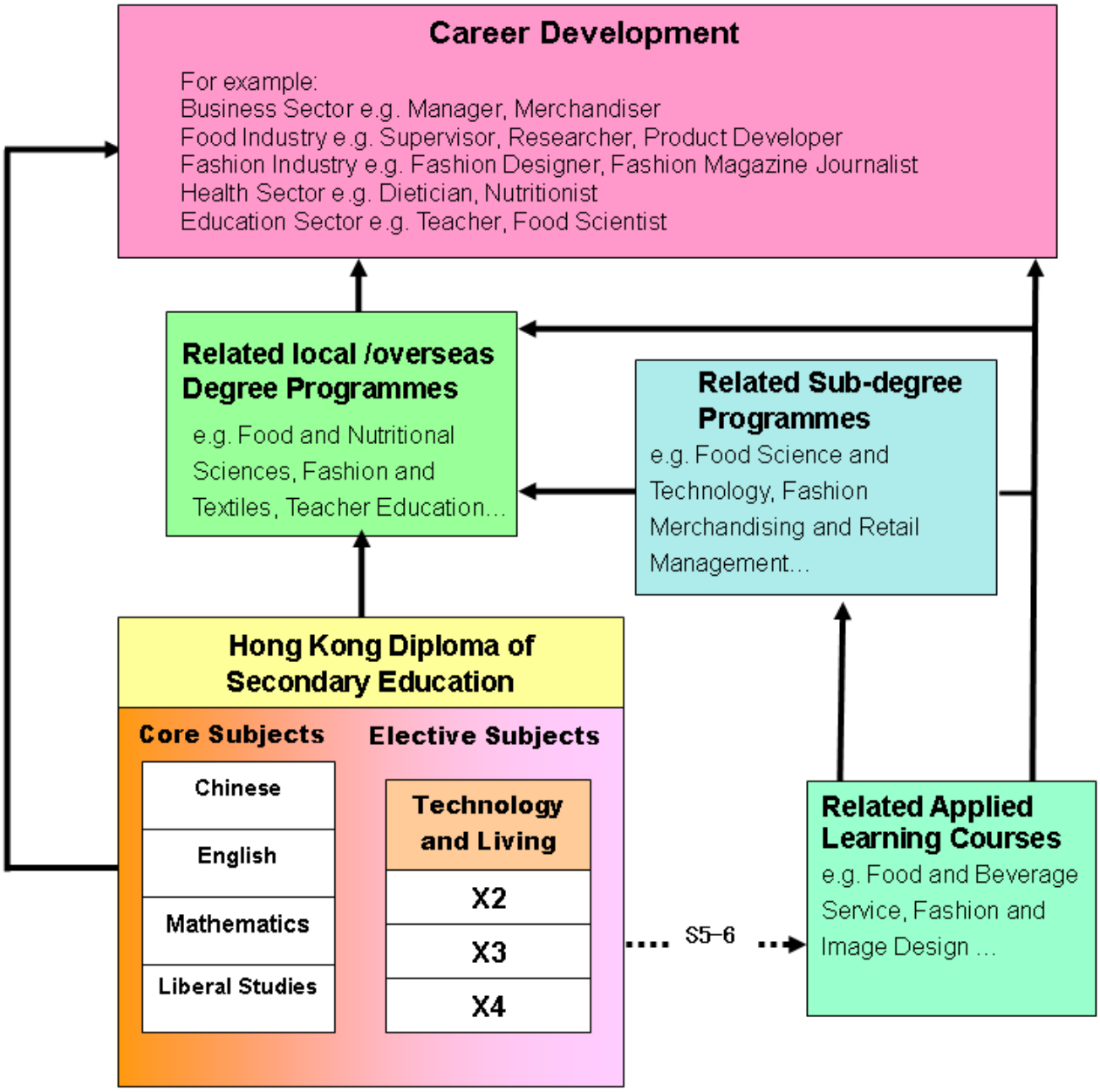


In other words, from various Key Learning Areas, students at junior secondary level will have acquired basic knowledge in the following areas: family living, nutrition, body health and the general functions of the body system, food commodities, colour and design, fibres and fabrics, simple food preparation / garment construction skills, and technical skills in carrying out related science experiments, and recording observations. They will also possess generic skills which are to be further strengthened and applied in their studies as stepping stones towards the development of a lifelong learning ability. At the senior secondary level, the curriculum is designed to provide a progression of challenging experiences for students who wish to study food or clothing in greater depth. Students are expected to build on their knowledge base through more in-depth study of the learning elements and concepts which contribute to responsible and effective management and use of resources for a quality life.

The study of the senior secondary Technology and Living curriculum will equip students with

the foundation knowledge and skills required for further studies at post secondary level and for training in professional and vocational areas. The curriculum should serve to provide students with the requisite knowledge and capacity for continuing their learning in various sectors as shown in the following diagram:

Figure 1.2 Progression pathways for students studying senior secondary Technology and Living



X – Elective Subject

1.5 Cross-curricular Links

In the senior secondary curriculum, students are expected to connect what they learn from various subject disciplines and examine their intertwining relationships and complexities from different perspectives through working on interdisciplinary themes, and solving problems or creating new ideas / solutions for tackling local or global concerns. The knowledge and skills that students acquire from senior secondary Technology and Living can be consolidated, extended or applied in learning tasks related to languages, mathematics, sciences, humanities, arts and even physical education. This will help them to develop a more holistic and coherent understanding of the world around them.

Chapter 2 Curriculum Framework

The curriculum framework for Technology and Living embodies the key knowledge, skills, values and attitudes that students are to develop at senior secondary level. It forms the basis on which schools and teachers plan their school-based curriculum and design appropriate learning, teaching and assessment activities.

2.1 Design Principles

The design of the senior secondary Technology and Living curriculum is premised on the learning goals and overarching design principles in the senior secondary curriculum as explained in the *Senior Secondary Curriculum Guide* (2009):

- **Prior knowledge**
  This curriculum articulates with relevant subjects at junior secondary level, as described in Section 1.4, which provides the basic background knowledge for their senior secondary studies.

- **Balance between breadth and depth**
  Senior secondary Technology and Living serves as one of the elective subjects to widen the spectrum of subjects available for student choice. Students carry out an in-depth study of specific strands in this subject.

- **Balance between theoretical and applied learning**
  This subject is positioned midway on the continuum of theoretical learning and applied learning.

- **Balance between essential learning and flexible and diversified curriculum**
  Two different strands and a number of modules in the elective part are offered in Technology and Living to cater for the different interests and abilities of students.

- **Learning how to learn and inquiry-based learning**
  This curriculum encourages students to build up a solid knowledge base and develop higher-order thinking skills, problem-solving skills and other generic skills to meet future challenges. Both the discovery approach and social enquiry approach are emphasised.

- **Progression of studies**
  Students can explore their interests through the study of the compulsory part in S4 which also forms the foundation for effective progression to S5 and S6 in their chosen areas of study.

- **Smoother articulation to multiple progression pathways**
  Students can pursue academic and vocational / professional education and training through articulation to a range of tertiary institution programmes or seek employment. Further information on this is set out in Section 1.4.

- **Greater coherence**
  There are cross-curricular elements in the curriculum to strengthen connections and complement lateral and vertical coherence.

2.2 Learning Targets

Through the study of the senior secondary Technology and Living – FST / FCT curriculum, students will be able to:

2.2.1 Knowledge and understanding

- examine the factors affecting the needs of individuals within various family structures and throughout the family cycle
- evaluate the nature and properties of food and the cultural, social and economic influences on the development of food and nutritional science, food technology and food product
- evaluate the nature of fashion design, the characteristics of fibres and fabrics; the construction, production and marketing of clothing and textile products; and the evolution of fashion trends, textile technology and clothing production methods

2.2.2 Skills

- develop social enquiry skills for seeking, interpreting, analysing and evaluating information for effective decision-making relevant to family life
- examine the cultural, physical, chemical, nutritional, biological and sensory characteristics of food, and how these properties can be applied in designing and producing food products to meet specified criteria
- investigate and apply scientific principles for food preparation and the food production process in different settings to solve problems creatively

- explore the historical, cultural, technological and social factors in the development of fashion, clothing and textiles and their relationships to the well-being of the individual, family and society
- apply appropriate principles and techniques for creating and presenting fashion ideas and illustrations, and in pattern and garment construction, for specific requirements and considerations in different settings
- develop and apply information technology skills in gathering, processing and analysing information related to food / fashion before making informed decisions, and create and present new ideas in food product development / fashion design

2.2.3 Values and attitudes

- respond sensitively to diversity among individuals and families
- take social justice and ecological sustainability into account when considering issues and actions in the contexts of food and clothing
- develop positive values and attitudes to make informed decisions that foster a healthy lifestyle and contribute positively to the social and economic future of society
- develop an aesthetic sense through the design and production processes of fashion, clothing and textile products

2.3 Learning Objectives

2.3.1 Family dimension

Students are expected to understand that:

- the development of individual and family identity is influenced by different perspectives – social, cultural, political, economic and technological
- relationships are enhanced through effective communication and other social processes such as conflict resolution, values clarification, resource management and problem-solving
- appropriate actions can make changes and support the needs of the individual and the family, and improve relationships

2.3.2 Food Science and Technology strand

Students are expected to understand that:

- the relationship between food and health is significant in enhancing the well-being of individuals and families
- perspectives on food science influence the relationship between food and health, and the health and well-being of individuals and families
- healthy food choices to enhance the well-being of individuals and families can be promoted through practical food preparation and food product development
- the complex chemical structure of nutrients determines their physical and chemical properties and their functional nature in food preparation
- hygiene and safety issues should be promoted through the practical application of the principles of food selection and preparation
- government and community health policies influence eating patterns
- lifestyle and cultural influences can be reflected through the selection and preparation of food and meals
- technological advances in food manufacturing and production techniques have resulted in an increased variety of food products available in the marketplace
- advertising, marketing techniques, the changing food market and social trends related to food products influence consumer behaviour and decision-making
- individuals' and families' well-being can be enhanced by using suitable practical skills in the selection and use of pre-prepared food products or the development of a new food product

2.3.3 Fashion, Clothing and Textiles strand

Students are expected to understand that:

- the selection, use and care of textiles are improved by a knowledge and application of their functional and aesthetic properties
- the chemical and physical properties of fibres, yarns and fabrics influence their performance and use
- the performance of textile products can be enhanced by scientific and technological processes
- the textile materials can be used to identify the cultural group and reflect the nature of the culture
- a culture can use textiles to communicate messages about the culture to those who are not part of the culture
- the design and construction of clothing is enhanced by a knowledge of elements and principles of design, functional properties of textiles, and suitable construction

techniques
- the design, construction and marketing of clothing are influenced by different perspectives
- the elements and principles of design and functional properties of textiles are applied when designing and constructing clothing.

2.4 Learning Outcomes

After studying the curriculum, students are expected to be able to:

- appraise the importance and value of maintaining a healthy lifestyle and promote the regular practice of good eating habits for individuals as well as families
- develop innovative ideas, and make sensible and ethical decisions based on well-grounded knowledge and evidence when developing food / textile products for individual / family / related industries / market use
- make use of a good aesthetic sense for wardrobe planning, create a personal style and image, and be flexible and creative in designing fashion or researching textile products
- apply generic skills and develop a critical mind in tackling and resolving problems and dilemmas related to the food / apparel industry at individual, family and societal levels

2.5 Curriculum Structure and Organisation

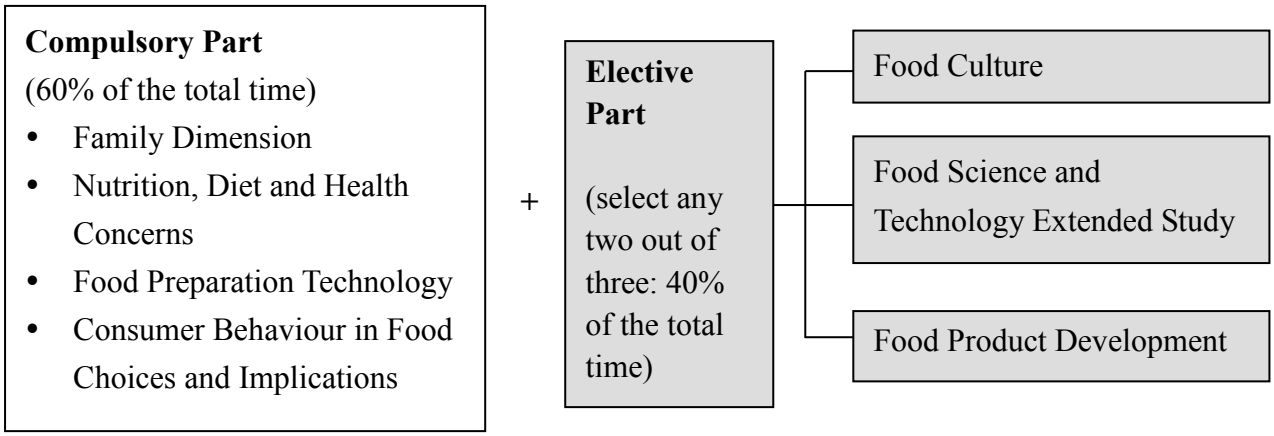
The senior secondary Technology and Living curriculum is composed of two strands for selection, namely:
Strand (A) - Food Science and Technology (FST)
Strand (B) - Fashion, Clothing and Textiles (FCT)
AND a common topic on "Family Dimension" in the compulsory part of both strands.

Students can choose either of the above strands for their studies. Each strand has a Compulsory Part and an Elective Part. Details of the suggested topics are listed below. All students, irrespective of the strand they choose, will study the topic on "Family Dimension" which is a common topic in the compulsory part of both strands.

A diagrammatic presentation of the curriculum framework is as follows:

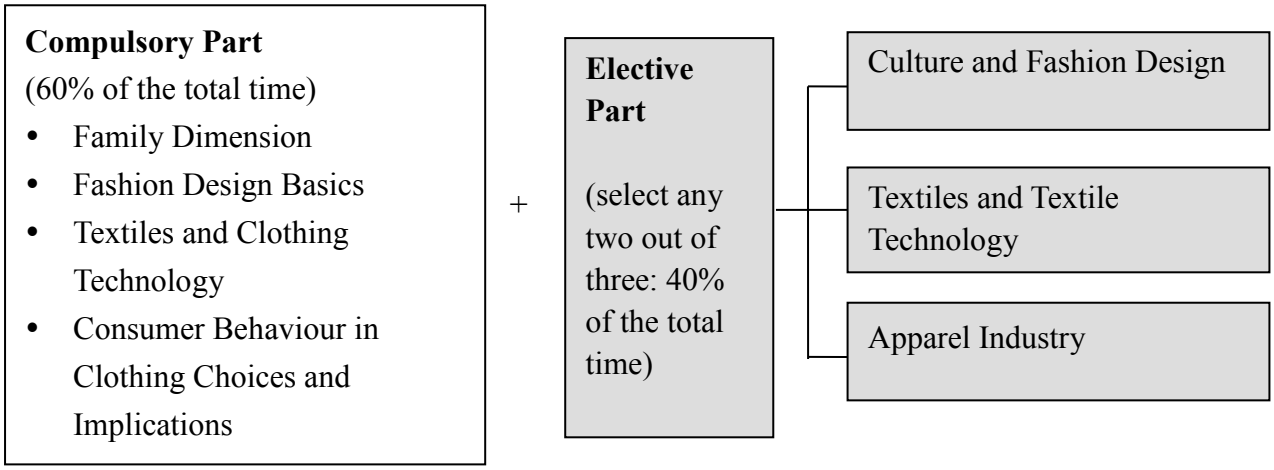
Figure 2.1 Curriculum framework of senior secondary Technology and Living

Food Science and Technology Strand



OR

Fashion, Clothing and Textiles Strand



2.5.1 Food Science and Technology strand

Students opting for the Food Science and Technology (FST) strand will examine the interrelationship between food culture, food science and technology and evaluate their impact on the well-being of individuals, families, related business sectors, society and the world as a whole.

Compulsory Part of Food Science and Technology strand

At the beginning of their senior secondary studies (i.e. the first term of S4), in the compulsory part, students will first examine the ecology of families in Hong Kong in the light of changing social, economic, political, scientific, technological and environmental phenomena and their implications in recent decades. This forms the basis for them to re-examine the more complex issues and their interrelationships, and evaluate the implications for the well-being of individuals, families and society in the food context. They will then study the nature of food, and the principles and technology used for its production, processing, preservation and packaging, as well as the relationship of food science, nutrition and diet and the moral use of technology in producing, marketing, choosing and consuming food for the well-being of individuals and their families.

(a) Family dimension

Students will be able to:

- understand the factors affecting the diversity of family structures and changing family lifestyles in Hong Kong in recent decades, and examine their impact and implications
- reflect on their behaviour, values and attitudes towards their changing roles and responsibilities of oneself in the family and other family members
- show empathy and positive attitudes towards peers with different family backgrounds and lifestyles

Topics	Explanatory Notes
1. What is a Family? ● Independent adults, children ● Cohabiting / coupling, marriage (blood ties), adoption **2. Value of Families and Role in Society** e.g. ● Love, security, harmony, self-image, self-confidence ● Consumption unit **3. Milestones of Family Life** ● Couple without children ● Becoming parents (babies, children, adolescents, adults) ● Becoming a father- / mother-in-law ● Becoming grand parents ● Death **4. Family Structures** (e.g. couples, nuclear, extended, single parent) **5. Factors affecting family ties and lifestyle in Hong Kong in the past four decades** ● Changing values and beliefs on the quality of life (e.g. family bonding, individualism, leisure, comfort) ● Social (e.g. family planning policy (birth control), working parents, domestic helpers / service providers) ● Economic (e.g. industrialised to service economy, blue collar, white collar, globalization) ● Political (e.g. change of sovereignty, immigrants, emigrants) ● Technology (e.g. ergonomic design for comfort, labour-saving and time-saving devices) ● Scientific (e.g. test tube babies) ● Environmental (e.g. pollution, global warming, body / public health) **6. Related impact on and implications for the food context** (to be studied together with related topics of the Food Science and Technology strand whenever applicable)	● identify basic components of a family and recognise the diversity of family structures ● understand the implications of milestones for oneself and family members, physically and psychologically, with a caring and considerate / accommodating attitude ● analyse the changing roles and responsibilities of oneself in the family and of other family members ● apply the relevant knowledge to other related modules in the Food Science and Technology strand from a family perspective

(b) Nutrition, Diet and Health Concerns

Topics	Explanatory Notes
1. Introduction ● What is food science? ● What is food technology? ● What is health? ● What is nutrition?	● define the terms
2. Nutrients and Water (A) Macro Nutrients (i) Carbohydrates Chemical structures ● Elements: carbon, hydrogen and oxygen ● Molecular structure: $C_6H_{12}O_6$ ● Classification ● Monosaccharides (e.g. glucose, fructose, galactose) ● Disaccharides (e.g. sucrose, lactose, maltose) ● Oligosaccharides ● Polysaccharides (e.g. starch, dextrin, cellulose, pectin, glycogen) Functions of sugar, starch and dietary fibre in body (ii) Protein Chemical structure ● Amino acids ■ essential amino acids ■ non-essential amino acids ● Peptides Functions in the body (e.g. for growth, repair and energy release, to maintain fluid and mineral balance, to maintain pH balance, and control bodily functions (components in hormones and enzymes))	● identify and understand different classifications and types of macro and micro nutrients, and the molecular structure of carbohydrates, proteins and lipids ● explain and examine the functions of nutrients and water for body health and nutrition ● understand the chemical reactions of nutrients in the digestive system

Topics	Explanatory Notes
(iii) Lipids Chemical structure ● Fatty acids, glycerol Classification ● Based on molecular structure ■ saturated fatty acids (e.g. butyric in butter) ■ monounsaturated fatty acids (e.g. oleic in corn and olives) ■ polyunsaturated fatty acids (e.g. linoleic in corn and peanuts, linolenic in soybeans, wheat germ) ● Based on physical state ■ fats ■ oils (hydrogenation of oil to fat) ● Based on dietary source, e.g. ■ milk fats (e.g. milk of cows, goats and other mammals) ■ animal fats (e.g. beef) ■ plant oil (e.g. peanut oil) ■ marine oils (e.g. fish) Functions in the body ● As a concentrated source of energy, cell production (essential fatty acids) and regulation of body temperature Lipids in the diet ● Omega-3 fatty acids ● Cholesterol – low density lipoprotein (LDL), high density lipoprotein (HDL) ● Unsaturated oils ● Trans fatty acids (B) Micro Nutrients Properties, functions, sources, daily intake and consequences of deficiencies	

Topics	Explanatory Notes
(long-term and short-term) of: (i) Vitamins • Water soluble Vitamin B complex (e.g. Thiamin (Vit. B_1), Riboflavin (Vit. B_2), Niacin, Vitamin B_6, Folate, Vitamin B_{12}) and Vitamin C • Fat soluble (e.g. Vitamin A, D, E, K) (ii) Minerals (e.g. calcium, iron, phosphorus) (C) Interrelationships between nutrients (e.g. iron and Vitamin C, iron and fibre, calcium and phosphorus, calcium and Vitamin D, calcium and dietary fibre) (D) Water Sources, daily recommended intake and functions in the body (E) Reactions of food and nutrients inside human bodies (e.g. digestion, absorption, assimilation, excretion of macro and micro nutrients)	

Topics	Explanatory Notes
3. Health and Nutrition (A) Health and Wellness ● What is wellness? ● Body and health ● Basal metabolism, human digestive system, growth, energy consumption, etc. ● Nutrition and diet (B) Balanced Diet ● What, why and how to maintain? ● Dietary guidelines (e.g. food pyramid) ● Recommended daily intake and nutrition labelling (C) Health Concerns ● Rural and urban nutritional issues (e.g. malnutrition and over nutrition) ● Causes and preventive strategies and measures for common nutritional disorders and diet-related diseases (e.g. obesity, anorexia nervosa, constipation, diabetes, high blood pressure and coronary heart disease)	● understand working definitions of commonly used terms related to health and nutrition ● identify the structure of the alimentary canal and other human organs involved in body metabolism, digestion, absorption and assimilation of food ● examine the relationships of health and nutrition regarding nutritional disorders and diet-related diseases

Topics	Explanatory Notes
4. Diet and Meal Planning (A) Determinants (i) Target Groups • Sex (male and female) • Age groups (e.g. babies, toddlers, adolescents, adults, the elderly) • Occupation (e.g. sedentary and manual workers) • Health concerns and specific needs (e.g. pregnant women, invalids, convalescents, vegetarians) (ii) Climate factor (e.g. seasons, geographic location, weather) (iii) Occasions (e.g. daily family meals, social gatherings, parties (birthday, anniversary, farewell), outings, festivals) (B) Principles of Meal Planning • Lifestyle and family living (e.g. nutritional, social and psychological needs, leisure, efficiency) • Financial and resource constraints (e.g. budget, time, cooking facilities)	• compare the similarities and differences in the nutritional requirements and dietary needs of individuals / family members, and explain the underlying principles and reasons • select or design suitable food items / dishes or meals for specified target groups and situations • recognise the relationship of activity levels and energy intake to health and wellness, including weight management • recognise the importance of balanced diet, and practise and promote healthy eating habits

(c) Food Preparation Technology

Topics	Explanatory Notes
1. Food Commodities (e.g. milk and dairy products, eggs, meat and poultry, fish and seafood, soya bean and soya bean products, vegetables, fruits, cereals and grains) • Classifications, nutritive value, properties and uses in meal planning and food production and manufacturing ▪ fresh / raw ▪ processed / preserved **2. Personal Food Hygiene Practices** • Personal hygiene • Preparation and serving • Storage of food **3. Advanced food preparation techniques and skills with use of time- and labour-saving devices** (e.g. boning, filleting, pastry making, dough making, cake decoration, use of mixer, blender, food processor) **4. Food Cooking Processes** • Scientific principles and types of heat transfer (e.g. conduction, convection, radiation, microwave, induction) • Cooking methods For example: ▪ moist method (e.g. boiling, braising, steaming, stewing and pressure cooking) ▪ dry method (e.g. grilling, baking, roasting and frying) • Effect of heat on digestibility of food commodities • Use and care of time- / labour-saving equipment (e.g. microwave oven)	• use of food composition table to compare the nutritive value of different food commodities • prepare and serve a variety of safe, hygienic, nutritious and delicious food items, dishes and meals with appropriate use of food cooking techniques, equipment and cooking methods to meet different dietary needs and specific meal planning requirements

Topics	Explanatory Notes
5. Food Spoilage and Food Poisoning (A) Food Microbiology • Definition and classifications of micro-organisms (B) Causes of food spoilage e.g. • Natural decay ▪ moisture loss ▪ enzymatic activity (e.g. proteolysis, oxidation, browning) ▪ chemical degradation (e.g. oxidation) • Contamination by micro-organisms (e.g. bacteria, yeast, mould) (C) Causes of Food Poisoning • Poisonous food (e.g. poisonous fungi, certain herbs) • Microbes – pathogenic organisms (e.g. Salmonellae, *Escherichia coli*, *Vibrio chloeae* to cause diseases such as diarrhoea, typhoid fever, cholera) • Chemicals (e.g. pesticide-tainted vegetables, Ciguatera Fish Poisoning) **6. Food Preservation** Why, what and how? • Purposes perishable foods and freshness, surplus supply, preservation of nutritive value, safety, availability, economic viability, environmental factors (infestation, oxygen, light and water), enzymatic activity, microbial contamination • Principles (e.g. control of temperature, moisture, adding of chemicals) • Methods (e.g. application of heat in pasteurisation, sterilisation and canning, chilling and freezing, evaporation, drying, use of sugar and salt, acids and preservatives, irradiation)	• understand the causes and conditions leading to food spoilage, food contamination and related food- borne diseases • apply principles and adopt safe, hygienic practices in food purchasing, preparation and serving • examine scientific principles behind various food preservation methods in relation to food spoilage • describe the sources, associated foods and symptoms of some common disease-causative micro-organisms

(d) Consumer Behaviour in Food Choices and Implications

Topics	Explanatory Notes
1. Factors influencing consumer choices of food ● Individual and family considerations (e.g. lifestyle, eating habits, health concerns, emotional needs, family needs, family income) ● Society (e.g. peers, media influence (e.g. advertising and marketing)) ● Culture (e.g. religion, customs) ● Environment (e.g. geographic location, environmental protection) ● Scientific and technological developments (e.g. genetically modified food, irradiation) **2. Implications** (e.g. social, economic and environmental impact on individuals, families, business sectors, societies and the world as a whole in relation to sustainable development)	● be cautious about marketing techniques, influences from peers, advertisements and media which may influence the choice of food ● decide how to strike a balance between having food for health and for psychological needs ● examine the complications and implications from individual, family and social perspectives ● review the moral roles and social responsibilities of oneself as a consumer

Elective Part of Food Science and Technology strand

Students may study any two electives from ***(a) Food Culture, (b) Food Science and Technology Extended Study*** or ***(c) Food Product Development*** for more in-depth understanding and analysis.

(a) Food Culture

Topics	Explanatory Notes
1. Food Heritage ● Role of food in family and social contexts ■ individual ■ family ■ society ● Regional / national food ingredients and dishes reflecting specific cultures ● Festive foods (e.g. Chinese New Year, Mid-autumn Festival, Christmas, Easter) ■ symbolic meaning ■ signature dishes ■ specialties ● Religious foods ■ dietary practices ■ religious holidays ■ adaptation to contemporary lifestyle and nutritional issues ● Nutraceuticals (principles and application of the therapeutic uses of food in the prevention of disease and/or disorder)	● identify specific features and examine factors contributing to the development of food culture in different places ● examine the relationship between food consumption patterns and health in certain places or regions, and suggest ways of improvement if appropriate

Topics	Explanatory Notes
2. Factors contributing to the development of a food culture in local and global contexts ● Geographical factors (e.g. climate, location) ● Historical and cultural development (e.g. ethnic groups, religious beliefs) ● Food availability (e.g. staple food, indigenous foods) ● Social influences (e.g. customs, traditions, eating habits and lifestyle) ● Economic factors (e.g. gross domestic product in developed and developing countries) ● Scientific and technological developments (e.g. food production and manufacturing processes, storage and distribution channels, marketplace practices) **3. Relation of food culture and health** ● Health issues and modifications of conventional dishes (e.g. mooncake) **4. Implications of future market trend** ● Globalization of food trade (e.g. food supply) ● Changes of socio-economic conditions ● Change of lifestyles and health concerns ● Relation between development of new food products and adaptation of food habits ● Advancement of food technology ● Marketing strategies	● evaluate the impact of globalization and related factors on the local food culture

(b) Food Science and Technology Extended Study

Topics	Explanatory Notes
1. Functional properties of food components for food production • Water (e.g. basic constituent) • Carbohydrate foods (e.g. gelatinisation and dextrinisation of starch, hydrolysis for the formation of sucrose or maltose, sugar in food preparation such as sweeteners, preservatives, tenderisers, crystallising agents, caramelising agents) • Protein foods (e.g. denaturation (physical / chemical methods), coagulation, foaming, emulsification) • Fats and lipids (e.g. emulsification) **2. Industrial Food Production** (A) Principles • Maintain product quality • Enhance flavours and colours • Control product consistency • Improve nutritive value (B) Food Processing (i) Use of Micro-organisms • Fermentation – types (e.g. lactic acid fermentation for sauerkraut, pickles, olives, meats, cultured dairy products; mould fermentation in soy sauce; acetic acid fermentation for vinegar) • Microbial changes in food during fermentation (e.g. alcohol, carbon dioxide)	• examine the biochemical functional properties of water, protein, carbohydrates and lipids in food • apply and synthesise knowledge and carry out related food chemistry experiments and food technology studies • evaluate the pros and cons of using additives in food processing and manufacturing and related issues • examine factors affecting the growth of micro-organisms, and the uses of micro-organisms in food industry • aware of the importance of observing strict rules regarding small-scale or large-scale food production in the business sector

Topics	Explanatory Notes
(iii) Use of Food Additives Applications and types ● Preserve product quality ■ antimicrobial agents (e.g. nitrites, acids) ■ antioxidants (e.g. citric acid) ● Enhance sensory characteristics ■ colouring agents – natural and synthetic ■ flavouring agent ● Control product consistency ■ anti-caking agents ■ emulsifiers ■ pH control agents ■ stabilisers and thickeners ■ improve or maintain nutritive value ■ iodine added to salt ■ vitamin D in milk ■ iron and vitamin B complex in cereal products ■ calcium fortified orange juice International Numbering System (INS) ● classification by numeric range ● other abbreviations (C) Food Processing Technology and Hygienic Practices ● Food technology (e.g. canning, freeze-drying) ● Hazard Analysis and Critical Control Point (HACCP) ● Food packaging materials and legal requirements (e.g. food labelling) ● Environmental issues (e.g. biodegradable plastic bags)	

(c) Food Product Development

Topics	Explanatory Notes
1. Types of Food Industries (e.g. beverages, bakery products, seasoning) **2. Factors to be considered in research and development of food products** (A) External Factors ● Economic environment (e.g. consumer demands (convenience and cost), company profitability) ● Ecological environment (e.g. health and the environment) ● Technological environment (e.g. processing equipment and packaging materials) ● Specific purposes (e.g. military purposes and space missions) (B) Trends in the Marketplace ● Emerging technology in food production, manufacturing and packaging (e.g. biotechnology in genetically modifying foods) ● Ecologically sustainable production methods (e.g. organic farming) ● Health-enhancing foods (e.g. functional foods) ● Value-added convenience foods (e.g. home meal replacement) ● Food product marketing practices (e.g. labelling foods with nutritional claims) ● Forms of business of the food industry (e.g. multinational food companies) ● Globalization of the food trade (e.g. trade agreements)	● identify different types of local and overseas food companies and examples of their specific product lines ● explain the principles in food product research and carry out information search, literature review and mini market research to develop a specific food product

Topics	Explanatory Notes
(C) Internal Factors ● Personal expertise ● Production facilities ● Financial situation ● Company image **3. Designing and developing food products** ● Planning ● Idea generation ● Market research ● Feasibility study ● Development of prototypes ● Multiple trial and sensory evaluation ● Consumer testing ● Marketing plan **4. Stages in the production of food products** ● Product life cycle ● Research and development ● Trial and piloting ● Production	

Note: The sequencing of topics in the above sections does not represent a fixed teaching sequence. Teachers are encouraged to organise and structure their unit / lesson plans flexibly to promote student learning in a meaningful and authentic context. Please refer to Chapters 3 and 4 for more details and suggestions.

2.5.2 Fashion, Clothing and Textiles strand

Students opting for the Fashion, Clothing and Textiles (FCT) strand are encouraged to express themselves in fashion design through creative use of clothing materials and advanced textile technology.

Compulsory Part of Fashion, Clothing and Textiles strand

At the beginning of their senior secondary studies (i.e. first term of S4), in the compulsory part, students will first examine the ecology of families in Hong Kong in the light of changing social, economic, political, scientific, technological and environmental phenomena and their implications in recent decades. This forms the basis for them to re-examine the more complex issues and their interrelationships, and evaluate the implications for the well-being of individuals, families and society in the clothing context.

(a) Family Dimension

Students will be able to:

- understand factors affecting the diversity of family structures and changing family lifestyles in Hong Kong in recent decades and examine their impact and implications
- reflect on their behaviour, values and attitudes toward their changing roles and responsibilities of oneself in the family and other family members
- show empathy and positive attitudes towards peers with different family backgrounds and lifestyles

Topics	Explanatory Notes
1. What is a Family? ● Independent adults, children ● Cohabiting / coupling, marriage (blood ties), adoption	● identify basic components of a family and recognise the diversity of family structures
2. Value of Families and Role in Society e.g. ● Love, security, harmony, self- image, self-confidence ● Consumption unit	
3. Milestones of Family Life ● Couple without children ● Becoming parents (babies, children, adolescents, adults) ● Becoming a father- / mother-in-law ● Becoming grand parents ● Death	● understand the implications of milestones for oneself and family members, physically and psychologically, with a caring and considerate / accommodating attitude
4. Family Structures (e.g. couples, nuclear, extended, single parent)	
5. Factors affecting family ties and lifestyle in Hong Kong in the past four decades ● Changing values and beliefs on quality of life (e.g. family bonding, individualism, leisure, comfort) ● Social (e.g. family planning policy (birth control), working parents, domestic helpers / service providers) ● Economic (e.g. industrialised to service economy, blue collar, white collar, globalization) ● Political (e.g. change of sovereignty, immigrants, emigrants) ● Technology (e.g. ergonomic design for comfort, labour-saving and time-saving devices) ● Scientific (e.g. test tube babies) ● Environmental (e.g. pollution, global warming, body / public health)	● analyse the changing roles and responsibilities of oneself in the family and of other family members
6. Related impact and implications for the clothing context (to be studied together with other related topics of the Fashion, Clothing and Textiles strand whenever applicable)	● apply the relevant knowledge to other related modules in the Fashion, Clothing and Textiles strand from a family perspective

(b) Fashion Design Basics

Topics	Explanatory Notes
1. Purposes and Principles • Aesthetic value (e.g. proportion, balance, rhythm, emphasis, contrast and harmony, unity, tone) **2. Fashion Design Elements** • Line and direction (e.g. arrow, Y line, T line, straight line, width of the panel) • Shape and size (e.g. natural, tubular, full, bell) • Texture • Pattern (e.g. nature, geometric, stripes, plaids, floral, abstract) • Colour and value (e.g. hue, value, intensity, chroma) **3. Fashion Design Process** • Identifying needs, inspiration of ideas (e.g. use of mood board), generating ideas, application of ideas, production of prototype, evaluation **4. Fashion Design Presentation** • Graphical skills (e.g. figure drawing, fashion illustration, production sketches, flats) • IT skills (e.g. use of computer-aided design)	• analyse the differences in visual impact and effect with a combination of various design elements • synthesise and create designs to meet specified requirements for textile products or garments • express ideas / concepts through artistic fashion illustration to highlight the essence of design • develop skills in designing, pattern drafting and construction

(c) Textiles and Clothing Technology

Topics	Explanatory Notes
1. Materials for Clothing and Textiles Fibre • Natural fibres (e.g. animal - wool, silk; plant – cotton, flax, ramie) • Man-made (e.g. regenerated - viscose rayon, acetate; synthetic - nylon, polyester, acrylic) • Principles of blending different fibres • Newly developed fibres (e.g. micro-fibre, Tencel) Other possible materials (e.g. paper, metal, plastic)	• investigate through experimentation the properties and characteristics of various types of materials for clothing and textiles • analyse how fibres and fabrics complement quality design and production of textile products and clothing
2. Fabric Construction • Construction (from fibre to yarn to fabric) • Types (e.g. woven, knitted, non-woven) • Colouration (e.g. printing, dyeing) • Mechanical finishing (e.g. raising, calendaring, embossing) • Chemical finishing (e.g. stain resistant, antistatic, anti bacteria) • Fabric quality (e.g. strength, elongation, elasticity, abrasion resistance, resilience, absorbency, dimensional stability and wrinkle-resistance)	
3. Garment and Clothing Construction • Purposes and relation with human body shapes and movements (e.g. ergonomics) • Methods of pattern construction (e.g. 2-dimensional - drafting of body blocks, adaptation / adjustment of basic block; 3-dimensional mock up; computer-aided drawing) • Construction and fitting know-how	• understand the rationale and principles for pattern and clothing construction • adopt various methods of pattern construction to meet specific purposes • compare the similarities and differences, and pros and cons, in individual and commercial pattern construction processes

Topics	Explanatory Notes
(e.g. seams / openings for neatening of raw edges for neck line, collar, waist, sleeve and pocket; fullness arrangement; fastening; trimmings) • Industrial technologies (e.g. laser technology, bar code system)	

(d) Consumer Behaviour in Clothing Choices and Implications

Topics	Explanatory Notes
1. Factors influencing consumer choices of clothing and textile products • Individual and family considerations (e.g. age group (i.e. babies, toddlers, adolescents, adults, the elderly), sex, figure type, personal image and style, wardrobe planning, lifestyle, physical needs (i.e. comfort, warmth), health concerns (such as maternity, allergy), family income (budget, value for money), occasions (i.e. formal - job requirements, informal - leisure, casual), durability) • Society (e.g. fashion trends, peer, media influence (e.g. advertising and marketing)) • Culture (e.g. ethnic / national / cultural identity, religion, customs) • Environment ▪ geographical location (e.g. ultra violet / Ozone, snow) ▪ environmental protection (e.g. "Green" Textiles) • Scientific and technological developments (e.g. computer-aided design) **2. Implications** (e.g. social, economic and environmental impact on individuals, families, business sectors, societies and the world as a whole in relation to sustainable development)	• compare the choice of clothing related to age, sex, occupation, occasions and activities and analyse the underlying principles • be cautious about marketing techniques, the influence of peers, advertisements and the media on purchasing habits • decide how to strike a balance between having clothing for psychological and physical needs • identify the impact of clothing manufacturing processes on environmental issues • examine the complications and implications of factors affecting choice of clothing from individual, family and social perspectives • review one's moral roles and social responsibilities as a consumer

Elective Part of Fashion, Clothing and Textiles Strand

Students may study any two modules from ***(a) Culture and Fashion Design, (b) Textiles and Textile Technology or (c) Apparel Industry*** for more in-depth understanding and analysis.

(a)Culture and Fashion Design

Topics	Explanatory Notes
1. Cultural Value and Fashion ● Design concepts of different cultures, lifestyles and relation to fashion trends and styles (e.g. beauty, socio-economic status, femininity, masculinity) ● Fashion styles in different eras and places around the world (e.g. fashion trends in the 1960s, 1970s, 1980s, 1990s to the present) ● National costumes of different countries	● understand the development of fashion in recent decades in relation to the cultural beliefs, social and economic background and technological development of a selection of places / countries ● identify specific features and cultural elements from a wide range of national costumes
2. Factors contributing to fashion trends in local and global contexts ● Geographical and environmental factors (e.g. weather, climatic, location) ● Historic and cultural developments (e.g. beliefs, religion) ● Social influences (e.g. lifestyle) ● Economic and political influences (e.g. quota system, embargo) ● Scientific and technological development (e.g. production and manufacturing process)	● examine the work of a selection of fashion designers in local and overseas contexts ● create fashion designs with the application of cultural elements and concepts of total image
3. Fashion Designers ● Career ladder and job duties ● Renowned designers of the past and present and fashion brands ● Design beliefs and style	

Topics	Explanatory Notes
4. Total Image for Fashion Design ● Elegance, sporty, ladylike, and business look, etc. (e.g. evening gowns, suits, sportswear – skiing, hiking, swimsuits) ● Use of fabric materials ● Use of accessories (e.g. hats, scarves, shoes, boots, jewellery)	

(b) Textiles and Textile Technology

Topics	Explanatory Notes
1. Fibre Blend ● Types (e.g. natural with natural, natural with synthetic, synthetic with synthetic, synthetic with regenerated) ● Advantages (e.g. quality improvement, increase of profitability) **2. Yarn** ● Types (e.g. staple, filament, single or ply yarns) ● Yarn produced from different yarn production system (e.g. carded, combed, worsted, woollen yarn) ● Yarn twist ● Novelty yarn (e.g. slub, boucle, core spun yarns) ● Numbering system (e.g. cotton count, denier system, tex system) **3. Fabric Construction** ● Methods (e.g. woven, knitted, non-woven fabric) ● Properties (e.g. durability, thermal insulation, moisture absorption, next-to-skin comfort, relative strength (wet and dry), extensibility, elasticity, electrostatic charge, flammability, effects of acids, alkaline and bleaches, effects of heat and light degradation) **4. Fabric Colouration** ● Dyes (e.g. sulphur, azoic) ● Dyeing methods (e.g. continuous dyeing, batch dyeing) ● Dyeing types (e.g. fibre, yarn or fabric dye) ● Printing types (e.g. direct print, discharge print, resist print) ● Printing (e.g. tie-dye, roller, screen, rotary screen, heat transfer) **5. Finishing** ● Mechanical (e.g. embossing, sueding,	● understand the characteristics of different types of blended fibres, yarn and fabrics developed under different production methods and their suitability for different types of textile products and clothing applications ● explain the interrelationship among fibres, yarn and fabrics and their applications in textile products and clothing ● investigate a selection of fibre, yarn and fabric qualities, and dyeing methods through experiments

Topics	Explanatory Notes
raising, pleating, felting, anti-felting, anti-pilling) ● Chemical (e.g. flame resistance, wrinkle free, mothproofing, easy care) **6. Fabric Quality** ● Trademarks (e.g. Wool mark, Goretex, Lycra) ● Legislation (e.g. care label, fibre label) **7. Latest Developments and Environmental Issues** ● Smart fabric (e.g. wearable electronics) ● High-performance textiles (e.g. breathable, waterproof, windproof) ● Green issues (e.g. renewable and non-renewable resources), recycling, new fibres (e.g. Tencel, Lycell)	

(c) Apparel Industry

Topics	Explanatory Notes
1. Types, size and operation of companies in the apparel industry ● Types (e.g. primary sector - textile manufacturing, secondary sector - clothing, tertiary sector - marketing and retailing) ● Small scale, mass production ● Operation of related departments / sections (e.g. merchandising, marketing) ● Examples of local and global companies in the industry **2. Business Environment** ● International (e.g. globalization) ● Local (e.g. Closer Economic Partnership Arrangement (CEPA), quota system) ● Political, social, economic, cultural and technological factors **3. Market Research and Development** ● Product life cycle ● Lifestyle and consumer needs ● Market segmentation (e.g. niche) ● Mass customisation ● Emerging technologies in fabric, clothing production, manufacturing (e.g. high functional products, "green" products)	● understand the industrial and commercial practices of clothing design, development and manufacture ● explain the role of the apparel industry in Hong Kong and analyse factors influencing the development and the positioning of Hong Kong textiles, clothing and allied industries within the global context ● carry out a mini market research on a selection of apparel products and suggest a new product line

Note: The sequencing of topics in the above sections does not represent a fixed teaching sequence. Teachers are encouraged to organise and structure their unit / lesson plans flexibly to enhance student learning in a meaningful and authentic context. Please refer to Chapters 3 and 4 for more details and suggestions.

2.6 Time Allocation

There are approximately 250 lesson hours[2] over three years for the learning and teaching of each strand in senior secondary Technology and Living. The proposed percentage of time allocation is as follows:

Figure 2.2 Time allocation for topics in Compulsory Part and Elective Part of Technology and Living

Food Science and Technology Strand

Topics	Proposed Percentage of Time Allocation
Compulsory Part ● Family Dimension ● Nutrition, Diet and Health Concerns ● Food Preparation Technology ● Consumer Behaviour in Food Choices and Implications	 8 % 20 % 20 % 12 % Sub-total: 60 %
Elective Part ● Food Culture ● Food Science and Technology Extended Study ● Food Product Development	 20 % 20 % 20 % (Any two modules) Sub-total: 40 %
	Total: 100 %

[2] The lesson time for Liberal Studies and each elective subject is 250 hours (or 10% of the total allocation time) for planning purpose, and schools have the flexibility to allocate lesson time at their discretion in order to enhance learning and teaching effectiveness and cater for students' needs.

"250 hours" is the planning parameter for each elective subject to meet local curriculum needs as well as requirements of international benchmarking. In view of the need to cater for schools with students of various abilities and interests, particularly the lower achievers, "270 hours" was recommended to facilitate schools' planning at the initial stage and to provide more time for teachers to attempt various teaching methods for the SS curriculum. Based on the calculation of each elective subject taking up 10% of the total allocation time, 2500 hours is the basis for planning the 3-year senior secondary curriculum. This concurs with the reality check and feedback collected from schools in the short-term review, and a flexible range of 2400±200 hours is recommended to further cater for school and learner diversity.

As always, the amount of time spent in learning and teaching is governed by a variety of factors, including whole-school curriculum planning, learners' abilities and needs, students' prior knowledge, teaching and assessment strategies, teaching styles and the number of subjects offered. Schools should exercise professional judgement and flexibility over time allocation to achieve specific curriculum aims and objectives as well as to suit students' specific needs and the school context.

Fashion, Clothing and Textiles Strand

Topics	Proposed Percentage of Time Allocation
Compulsory Part ● Family Dimension ● Fashion Design Basics ● Textiles and Clothing Technology ● Consumer Behaviour in Clothing Choices and Implications	 8 % 20 % 20 % 12 % Sub-total: 60 %
Elective Part ● Culture and Fashion Design ● Textiles and Textile Technology ● Apparel Industry	 20 % 20 % 20 % (Any two modules) Sub-total: 40 %
	Total: 100 %

The above proposed time allocation is a rough estimate for teachers' general reference. Adjustments can be made flexibly based on the background, knowledge base and abilities of students in individual schools. The topics listed are not meant to be taught in isolation, but should not exceed the specified percentage of time. Connections with other topics in the compulsory or elective part should be pursed whenever appropriate.

Chapter 3 Curriculum Planning

This chapter provides guidelines to help schools and teachers to develop a flexible and balanced curriculum that suits the needs, interests and abilities of their students, and the context of their school, in accordance with the central framework provided in Chapter 2.

3.1 Guiding Principles

It is very important for school management that the Technology and Living panel chairpersons and teachers concerned discuss, plan, and collaborate in designing and implementing the senior secondary Technology and Living curriculum to promote students' learning and cultivate their generic skills, positive values and attitudes, taking account of the following principles:

3.1.1 Alignment with a broad and balanced whole school curriculum

The provision of a wide range of elective subjects in the senior secondary curriculum is designed to widen the knowledge base for student selection and provide opportunities for in-depth study of individual subjects to prepare students for further studies and career aspiration. To achieve the overall goals of senior secondary education as stipulated in the *Senior Secondary Curriculum Guide* (2009), schools should design and develop a broad and balanced school-based curriculum by offering elective subjects from various Key Learning Areas, including the Technology Education Key Learning Area (TEKLA), to complement or supplement student learning as a whole. The traditional way of having science / arts / business streams is to be replaced by having a mixture of elective subjects (including Applied Learning (ApL), formerly known as Career-oriented Studies) from various KLAs together with Technology and Living to widen student choice and promote whole-person development.

- ***Positioning of Technology and Living in the whole school curriculum***

  Senior secondary Technology and Living can be offered as one of the elective subjects in the school curriculum, together with other senior secondary elective subjects for various purposes, such as (i) to broaden students' knowledge base, (ii) to complement related studies, (iii) to aspire to a career (iv) to prepare for further studies and (v) as an non-examination subject for enrichment. Some examples of combinations are:

- Technology and Living + Geography + Physics + Ethics and Religious Studies
- Technology and Living + Visual Arts + Tourism and Hospitality Studies
- Technology and Living + Chemistry + Business, Accounting and Financial Studies
- offering Technology and Living as an non-examination subject with a selection of topics from the curriculum to meet the specific needs and interests of students in particular schools, so as to enrich Other Learning Experiences (OLE) for all-round and whole-person development

- ***Selection of strands and related Elective Subjects***

Schools are encouraged to offer the full curriculum to meet the diverse learning needs of students. However, if there are constraints which prevent schools from offering the full curriculum, either by themselves or in partnership with other schools, students must be informed well in advance, say six months, prior to the start of S4 regarding: (i) the strands to be offered and (ii) the combination(s) of modules to be provided in the elective part. Modules in each strand may be combined as follows:

Figure 3.1 Combinations of modules in the Elective Part of Technology and Living

Senior secondary Technology and Living: Food Science and Technology strand	Senior secondary Technology and Living: Fashion, Clothing and Textiles strand
Module 1 and 2	Module 1 and 2
Module 2 and 3	Module 2 and 3
Module 1 and 3	Module 1 and 3

Possible scenarios, depending on the mix of students, teacher expertise and school facilities, are exemplified below:

Figure 3.2 Number of teachers required under different scenarios

	Senior secondary Technology and Living: Food Science and Technology strand	Senior secondary Technology and Living: Fashion, Clothing and Textiles strand	Total number of teacher(s)
School A (Boys' School)	Module 1 and 2 or Module 2 and 3	Not offered	One
School B (Co-educational School)	Module 1 and 3	Module 1 and 3	two (one for each strand)
School C (Girls' School)	Module 1,2 and 3 for students' free selection	Module 1, 2 and 3 for students' free selection	six (one for each combination)

3.1.2 Meeting student needs and developing their potential

Many students will be more motivated to learn, and usually learn better, in authentic and meaningful contexts and situations. Technology has become an integral part of their life and making far reaching interactions and impacts in shaping their personal and social values. Students who study senior secondary Technology and Living will have ample opportunities to make use of their experience of life and of what they have learned to compare, analyse, evaluate, and try out new ideas and products, and create new items to improve the quality of life for individuals, the family and the community. In the process, they will strengthen their collaboration, communication, problem-solving and information technology skills.

3.1.3 Learning and teaching

Teachers are expected to have a thorough understanding of the rationale, aims, learning targets, learning objectives and learning outcomes of the curriculum. Careful consideration of student background, learning styles, abilities and interests will enhance the organisation and planning of teaching schemes, learning and assessment, so that deep learning can be fostered among students. More information is provided in Chapter 4.

3.1.4 Maximising available manpower and resources

- ***Manpower***

  The school management and Technology and Living panel chairpersons must be flexible in deploying teaching staff (such as teaching assistants) and support staff (such as laboratory technicians) and in the use of school facilities and equipment. This can provide the necessary professional and logistical support when carrying out student learning activities outside the classroom. Learning activities can be incorporated into school or community events as enrichment for students' "essential experiences". Schools with small number of students opting for senior secondary Technology and Living may consider forming a cluster of schools and collaborating with them to offer networked classes to cater for the diverse needs and interests of students and for cost effectiveness.

- ***Flexible room usage***

  Most TEKLA electives require the support of equipment, software, storage, and material and in most schools, the existing facilities are considered sufficient to support the offering of the related elective subjects. Schools that do not have a Technology and Living Room can consider the following arrangements:

  - Use of the Science laboratory for carrying out food-related / textiles-related experiments
  - Use of the Art Room for lessons related to the Fashion, Clothing and Textiles strand with a supply of portable equipment (e.g. sewing machines) which could be stored away after lessons
  - Use of the Multi Media Learning Centre / Library for students to develop information and communication technology skills for enquiry work, and working on learning tasks and assignments
  - Use of portable equipment for setting up a temporary Food Technology or Textile Technology Area in multi-purpose rooms / classrooms with basic facilities, such as electricity and water supply, for practical work related to the Food, Science and Technology strand
  - Conversion of an ordinary classroom or assignment of an area in the school building as the Food Technology Area for food product development in a safe and hygienic setting.

- ***Flexible time-tabling and grouping***

  Apart from the conventional fixed lesson time schedule, it is necessary for Technology and Living panel chairpersons and the teachers concerned to explore creative solutions for arranging rooms and groups with the school management. Schools can flexibly adopt the following means to maximise the use of manpower: block-time-tabling, integrated subject time-tabling, lecturing to large classes, group tutorials, and alternate group work.

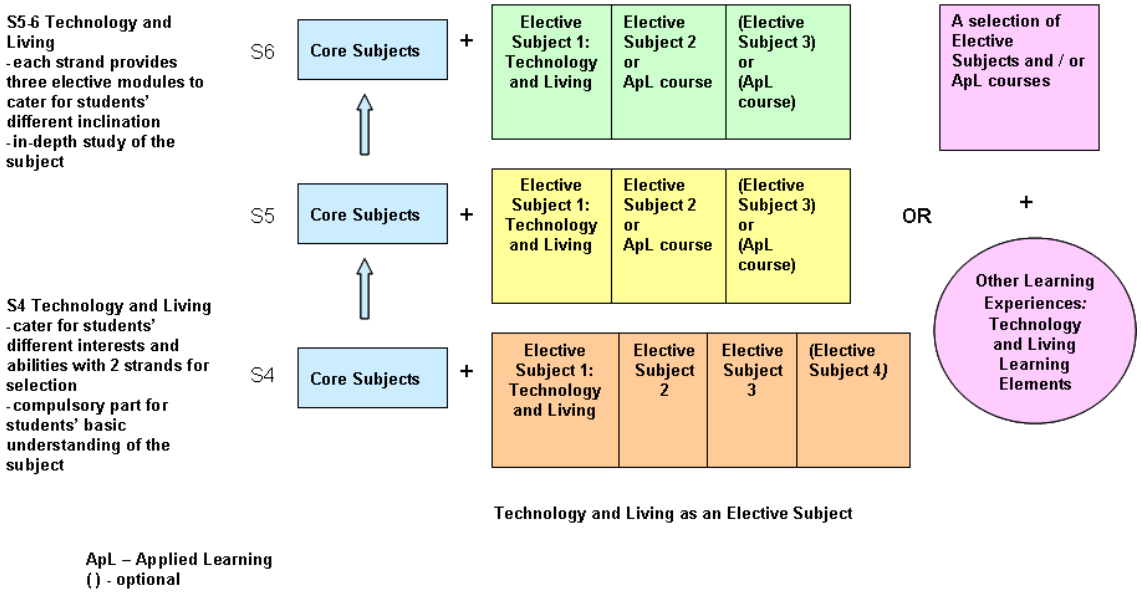
3.2 Progression

The wide range of related topics that students learn in the different Key Learning Areas at junior secondary level will provide the necessary prior knowledge for the study of senior secondary Technology and Living, irrespective of gender and background knowledge (including students from boys' schools without Technology and Living).

It is proposed that, in S4, students begin with the study of the compulsory part of the curriculum which includes all the essential learning elements and basic building blocks for their understanding of the subject as a whole. Depending on the pace of teaching and ability of students, the teaching of the elective part can start at any time in S5 and continue in S6. Alternatively, teachers can use an integrated approach and introduce related topics and learning elements of the elective part in S4 along with the compulsory part.

Students who prefer more applied learning and wish to focus on a particular aspect of senior secondary Technology and Living may study related ApL courses in S5 and S6. Information on ApL course are provided in the *Senior Secondary Curriculum Guide* (2009).

Figure 3.3 Progression of studies in Technology and Living at senior secondary level



3.3 Curriculum Planning Strategies

3.3.1 Understanding the curriculum and student needs

Teachers are expected to have a thorough understanding of the rationale, aims and learning targets of the curriculum prior to their planning it for their own students. This helps to set the direction for teachers and students to reflect regularly on whether the knowledge taught / learnt contributes to achieving the ultimate aims of the curriculum and senior secondary education. It is also important for schools and teachers to understand the cognitive, psychological, and social development of teenage students and consider the following factors when planning the senior secondary Technology and Living curriculum:

- ***For students of different abilities***

  Both conceptual learning and experiential learning are suggested so that students with different abilities and learning styles can benefit from the varied teaching strategies and learning tasks, and can grasp or apply abstract concepts through working on authentic tasks.

- ***For students with different inclinations***

  The rationale for the provision of two different strands and a selection of topics in the elective part of each strand aims to cater for students with different inclinations.

- ***Making student learning more meaningful***

  Contextualised learning (e.g. planning a meal for grandparents, designing an outfit for a sports team) helps students to explore how to solve real-life problems for themselves, their peers, their families and society. Their motivation to learn will also be strengthened.

- ***Integrating conceptual learning with life-wide learning experiences***

  Learning is not confined to the classroom. Ample opportunities should be provided for students to make use of the knowledge and skills they learn in the subject within their families, schools or community to foster positive attitudes. In addition, visits to local, Mainland or overseas food or clothing industries and community centres can help students to broaden their perspectives and understand how theory underpins practice in the real world. For example, students could interview a fashion designer in his / her workplace, or conduct a questionnaire survey in a youth centre to analyse their eating habits.

- ***Integrating learning with assessment***

  To achieve the goals of "assessment for learning", some of the assessment activities can be planned and integrated into classroom lessons or carried out in the form of internal school-based assessment. Assessment rubrics or marking criteria and written feedback should then be provided to students on their strengths and weaknesses. Schools and teachers are encouraged to review and plan the curriculum flexibly and make appropriate re-adjustments where necessary, taking into account the SBA implementation arrangements for the subject as specified in Chapter 5 – Assessment.

3.3.2 SWOT analysis

In the process of formulating a strategic plan for the implementation of the curriculum, the following "strengths, weaknesses, opportunities and threats" matrix may be useful as a starting point for reflection. Teachers can identify the direction for curriculum development and find out how to build on the school's strengths and improve the quality of student learning.

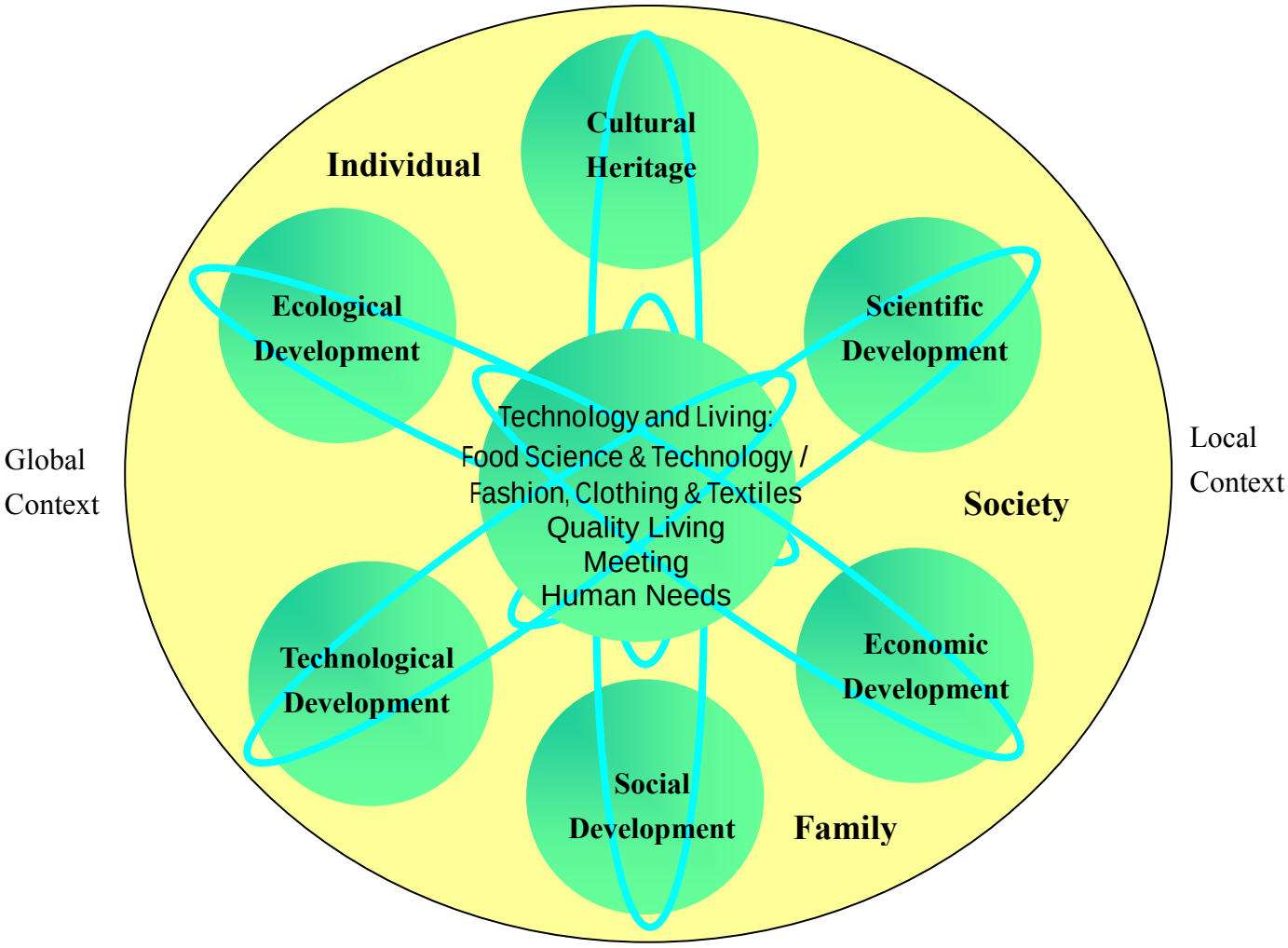
Figure 3.4 A "SWOT" Matrix

Strengths	Weaknesses
Opportunities	Threats

3.3.3 Use of concept maps

To develop a holistic understanding of the senior secondary Technology and Living curriculum, teachers can make use of the following concept map to draw upon current issues / interesting themes to show the complexities and dynamics involved in the interplay of the various factors, and their impact and implications for individuals, families, societies, and the world as a whole. They may also find it helpful for identifying the gaps in their curriculum planning and encouraging students to develop their own concept maps as an aid to learning.

Figure 3.5 Concept map of possible dimensions for senior secondary Technology and Living



3.3.4 Collaboration and networking

There will normally only be one or two Technology and Living teachers in a school. It is, therefore, desirable for them to explore opportunities for collaborating with other subject teachers within their school, and establishing networks with other teachers outside their school and with relevant professional and business organisations in the community. This will help students to understand the lateral and vertical coherence of the curriculum at various levels, and their connections to everyday life. It will also widen the teachers' scope in designing and implementing the curriculum, as well as broaden the exposure of students to a wide range of learning platforms to scaffold and apply their knowledge in a constructive and meaningful way.

Teachers from different schools can also form networks to reflect and share their tacit knowledge and experience when designing and developing curriculum resource materials.

3.3.5 Flexible use of learning time

Teachers are encouraged to make flexible use of learning time during and outside school hours. In addition to the single / double / triple periods to be provided for each cycle or week in the school time-table, block time-tabling may be used to arrange the Technology and Living lessons. This provides an opportunity for student to concentrate on certain areas in food / fashion to develop deeper learning.

- ***Learning outside school hours***

  In Technology and Living, authentic experience or observation is very important. Activities such as visiting food production / fashion design companies or food / textile laboratories, organising a food fair / fashion show, interviewing personnel in related careers (e.g. dietician, food product researcher, fashion designer, fashion merchandiser) provide opportunities for students to understand how the underlying principles of the subject are realised in authentic situations. Such activities can also help them to develop career aspirations.

3.3.6 Integrating curriculum planning, learning, teaching and assessment

Assessment is an integral part of the learning and teaching process. When planning the curriculum, related assessment tasks or performance tasks could be designed alongside with the learning tasks. The emphasis should be placed on assessment for learning. Timely and quality feedback is important for students to find out how to improve their learning.

School-based Assessment (SBA) and internal assessment can be built into regular learning and teaching activities (e.g. experiments, practical work) to avoid placing additional workload and pressures on teachers and students as far as possible. SBA should not appear to be an “add-on element”. Information on assessment (including SBA and written examination) are given in Chapter 5.

3.4 Curriculum Management

School heads, Technology Education Key Learning Area coordinators, Technology and Living panel chairpersons and teachers have different roles in managing the Technology and Living curriculum to ensure that its goals and aims are achieved and students learn effectively.

3.4.1 Roles of school principals

To cater for the different needs and abilities of students, school heads are expected to steer the planning of a whole-school curriculum and assessment practices in line with the recommendations of the curriculum reform, and the school mission and vision.

3.4.2 Roles of curriculum leaders

Technology Education Key Learning Area coordinators, and Technology and Living panel chairpersons are expected to lead and guide panel members to review and reflect on their pedagogical practices regularly to improve student learning, focus more on how students learn and how they could improve their learning through changes in their pedagogy in everyday classroom lessons.

3.4.3 Roles of Technology and Living teachers

Due to rapid social, scientific and technological development, issues and topics in both food and fashion contexts are ever-changing. Technology and Living teachers should keep abreast of the latest developments in these areas. To maximize students' potentials and arouse their motivation, teachers should create a learning environment in which students apply related theories and principles of the subject within lesson time and outside school hour.

3.4.4 Capacity building

As the work of teachers has a direct impact on the quality of student learning, their views on concepts such as a learning organisation / learning community knowledge construction need to be thoroughly and openly discussed with the school head and middle management. This will help to ease their worries, share their tacit knowledge, clarify their misconceptions and support each other. There is a need for school management to work with teachers to encourage sharing, attendance at professional development programmes, and mutual support through such activities as collaborative lesson preparation. Teachers can discuss the findings

collected from action research, the effects of using different assessment modes, learning and teaching approaches and the like.

3.4.5 Time-tabling and grouping

Panel chairpersons need to work together with school management to arrange practical lessons and grouping students for theory lessons, to make the best based on individual school context. This will maximise the use of available facilities and equipment, including science laboratories.

3.4.6 Resource support and development

Possible sources of funding support are outlined below:

- ***Diversity Learning Grant***

  Schools are encouraged to use the Diversity Learning Grant to offer a diversified curriculum. The grant supports schools in offering elective subjects with low enrolment.

- ***Subject Grant***

  The Subject Grant will be offered to schools in the form of a Block Grant. This enables schools to manage their resources flexibly. In preparing their budgets, it is suggested that schools should include expenses for the purchase of reference books, learning / teaching materials, teaching aids and materials for students to carry out their practical work and assignments / projects.

- ***Schools with Technology and Living (formerly known as Home Economics) Rooms***

  In addition to the Technology and Living Rooms, the teaching of some of the topics such as food / textile experiments also requires the use of Science laboratories and the support of laboratory technicians.

In addition, panel chairpersons and teachers are encouraged to keep abreast of the latest information and reference materials related to the curriculum through various means – for example from the web, journals, reference books, and newspapers – and these may be used for designing learning and teaching tasks or materials that relate closely to the daily life of students.

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Chapter 4 Learning and Teaching

This chapter provides guidelines for effective learning and teaching of the Technology and Living curriculum. It is to be read in conjunction with Booklet 3 in the *Senior Secondary Curriculum Guide* (2009), which provides the basis for the suggestions set out below.

4.1 Knowledge and Learning

Students in the 21st century face complex and dynamic challenges brought about by the advances in communication technology and globalization. The electronic / digital age has revolutionised not only how we learn in a knowledge-based society but also how we use knowledge to make informed and ethical decisions to resolve problems. Teachers need to be aware of contemporary theories of knowledge, learning, teaching and assessment, and consider their implications for helping students to be effective learners of the subject.

4.1.1 Views of knowledge

Teachers' understanding of how knowledge is constructed affects what they see as worth learning and how the key concepts and content in senior secondary Technology and Living can be best organised to achieve the goals of the curriculum.

Recent research findings have indicated that knowledge is dynamic, holistic, personal and contextualised. Knowledge is constructed when students enquire, experiment, reflect and interact with other people. One can even create new knowledge by exploring, synthesising and proving with evidence.

It is crucial for both teachers and their students to have clear conceptions of what constitutes "knowledge" as this influences how teachers interpret the curriculum and select their pedagogies, and how students view their studies.

Teachers need to help students understand that knowledge can be found everywhere and learning is not confined to the classroom. Knowledge can be personally constructed or jointly constructed with others. In this context, teachers need to take a fresh look at their own roles and those of their students.

- **Roles of teachers**

  Technology and Living teachers are encouraged to move from direct teaching and transmission of knowledge to playing more of a **facilitator role** when students progress to senior forms. They should encourage cross-curricular learning and project-based learning to help students shift their focus from compartmentalised learning of a specific subject to a more integrative understanding of issues and problems. Students also learn better when they are given opportunities to explore and to learn from their mistakes in the learning process. [Please refer to Example 3 in Appendix 1.]

- **Roles of students**

  In addition to learning the basic content knowledge of the subject, students should be encouraged to take **a proactive role** in developing their generic and independent learning skills in the context of studying Technology and Living. Their reliance on knowledge transmitted and materials prepared by teachers should gradually decrease as they progress from S4 to S6. [Please refer to Example 3 in Appendix 1.]

- **Dual roles of learners and facilitators**

  To develop a learning community in schools, teachers and students have to learn together through dialogue, discussion and debate. The information students gather in self-study projects using, for example, the Internet may go beyond the teachers' knowledge of the subject. So, in this process, the teachers have acted as both facilitators and learners. Teachers can encourage this through asking students thought-provoking questions, which enable them to explore their own understanding and learn from each other. Students can also collaborate in carrying out project work or group presentations, and learn together and from each other.

4.1.2 Views of learning and teaching

Concepts for Technology and Living teachers

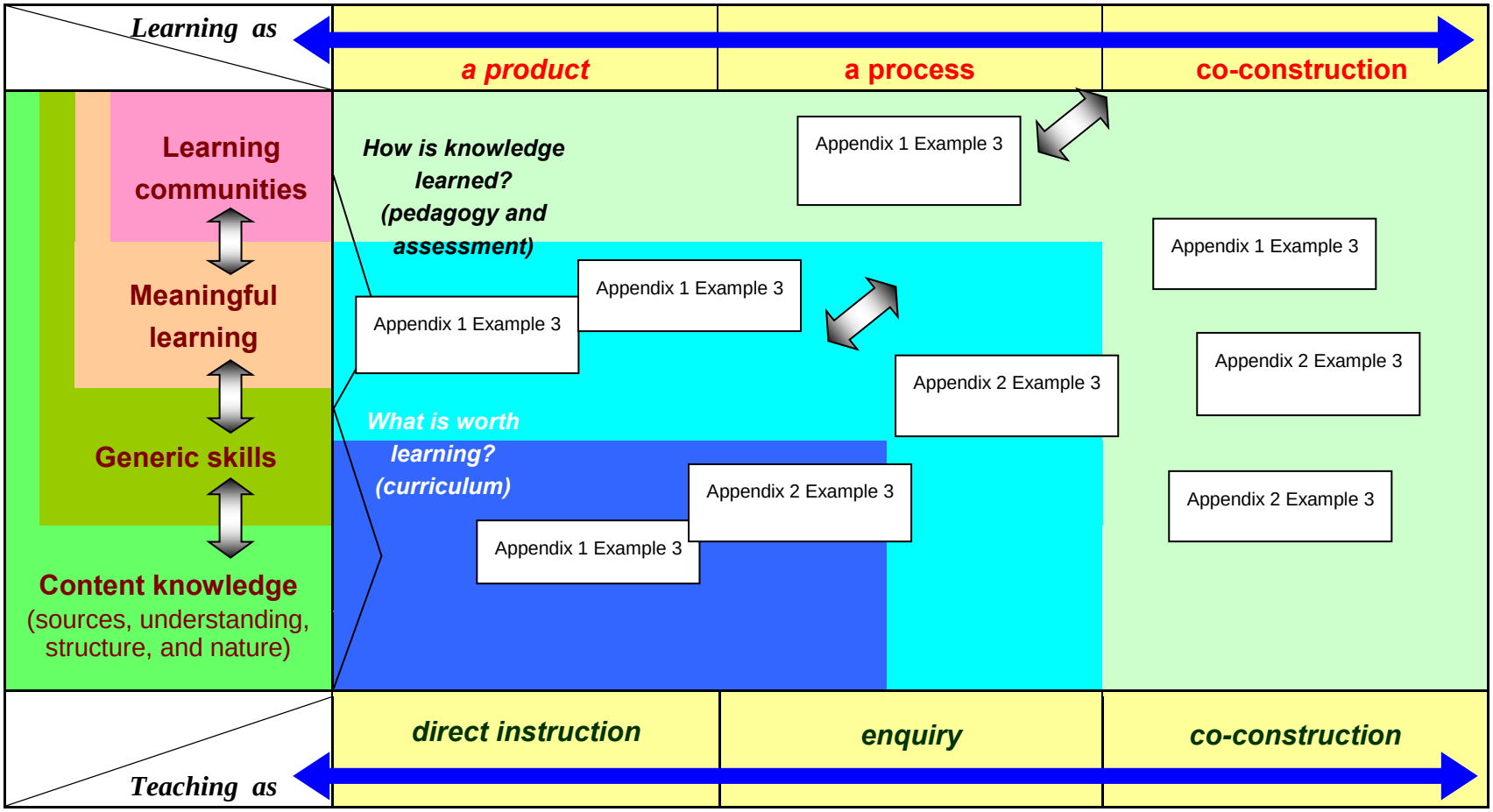
The following table outlines several intertwined learning and teaching approaches which Technology and Living teachers can use to review, reflect on and improve their classroom practices:

Learning as a product In the school context, learning is usually conceived of as an outcome. Students learn some new knowledge and skills from their teachers by studying specified parts of the curriculum with pre-determined goals, targets and objectives. Learning is considered successful when there are enduring changes in knowledge and skills. (Refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.)	***Teaching as instruction*** This occurs when teachers present new knowledge, teach students how to use advanced organisers in the process of learning, provide opportunities for them to learn and practise, check what they know with quick questions and answers, and provide informative feedback for them to review and improve their learning. (Refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.)
Learning as a process This occurs when students are given opportunities to transform information in solving problems. (Refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.)	***Teaching as enquiry*** With the use of appropriate learning and teaching strategies, students can be engaged in complex cognitive processes that require thoughtful discourse. Students are often invited to make predictions, debate alternatives etc., and this can take place during interactive whole-class teaching or in pairs / groups. The chosen topic / theme should be placed in a wider meaningful context. "Open-ended" questions are used to foster thinking and "wait time" is allowed to encourage explanations or elaboration of answers. (Refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.)
Learning as co-construction Students and teachers construct and create knowledge together. This occurs when students demonstrate their	***Teaching as co-construction*** Teachers help students to develop higher-level cognitive skills by using "scaffolds" (i.e. temporary supportive

knowledge and skills, and perform competently. Their insights also help their teachers to see students' new perspectives and ideas. (Refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.)	frameworks). Teachers can provide model responses (e.g. demonstrations and model answers), prompts and feedback (as in guided discovery); give cue cards and self-evaluation checklists for students to rehearse argument in enhancing students' understanding. (Refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.)

The following figure shows how the above concepts can be realised in learning and teaching the Technology and Living curriculum:

Figure 4.1 Approaches to learning and teaching



4.1.3 Views of assessment

Assessment is an integral part of the learning and teaching cycle: it should contribute to enhancing learning and teaching. The focus should be on "assessment *for* learning" rather than "assessment *of* learning" which merely involves "end of unit" tests and examinations. When aligning the curriculum and linking pedagogy to assessment, Technology and Living teachers should reflect on these questions:

- When should students be assessed?
- What is the purpose of a specific assessment task in Technology and Living?
- How should students be assessed so that they can demonstrate that they have achieved the desired outcomes?

To help students understand how they can improve through the learning and assessment tasks, teachers need to explain the goals and objectives clearly. In addition to giving constructive feedback, it is helpful to provide rubrics, checklists and marking criteria to enable students to review their own performance. For further details, please refer to Chapter 5 of this guide.

4.2 Guiding Principles

Apart from giving attention to conventional considerations like age, gender, physical condition, academic ability, motivation, learning style, self-concept, family and cultural background, all of which influence how students go about their learning, teachers should consider the following guiding principles for effective learning and teaching of Technology and Living:

- ***Knowledge***

  Both teachers and students need to understand that knowledge exists in various forms. The learning of Technology and Living is not limited to established discipline knowledge from the literature on the various strands in the curriculum. Updates on recent research findings in the food, textile science and health fields are also necessary to keep students abreast of the latest developments, issues and concerns in both the local and global contexts (e.g. food and health issues / fashion and fabrics). Students must realise that, in the present information era, knowledge is dynamic. Opportunities should be given for students to interact with others and learn by constructing meaning from contextualised knowledge.

- ***Learning***

  In this curriculum, learning can take place in a wide variety of ways. For example, students acquire knowledge through lessons conducted by teachers in class, but they also learn through carrying out practical work, experiments and mini-studies, and by collaborating with classmates in project work and by having access to sources of knowledge and experience outside classroom.

- ***Understanding learning targets***

  Technology and Living teachers should design their teaching schemes, lesson plans and learning activities in advance, with clear learning targets; and these targets should be explained to students so that they are aware of the direction of their studies.

- ***Using a wide range of learning and teaching strategies***

  Good teachers use a wide range of learning and teaching approaches to cater for the different learning styles, abilities and interests of students, as well as to achieve the learning targets of the curriculum.

- ***Teaching for understanding***

  Deep learning helps students to connect concepts, apply and transfer their knowledge to problems solving in novel situations. This will be promoted when the teaching of Technology and Living supports thorough understanding rather than the ability to just remember disconnected facts and data.

- ***Building on prior knowledge and experience***

  New concepts, ideas and knowledge should be built on students' prior knowledge and experience. Students' learning is enhanced when they can relate new contexts and situations to earlier learning and experiences. Technology and Living teachers should base the design of their lessons on their students' existing knowledge and experience.

- ***Promoting quality interaction***

  The nature of the interaction between teachers and students, and among students, is critical for effective learning. Teachers can help to develop students' critical thinking

skills by asking thought-provoking questions, and giving constructive feedback (verbal or written) that informs students clearly about how well they are progressing and how they can improve their learning. Please refer to Section 4.4 for more details.

- ***Aligning assessment with learning and teaching***

  To enable students to learn better, assessment should be used as an integral part of learning and teaching the subject.

- ***Making effective use of resources***

  Facilities, equipment, printed and electronic texts and other resources are useful tools for learning. Teachers should use them flexibly and creatively to facilitate students' understanding of content knowledge.

- ***Enhancing motivation***

  Motivation is a strong driving force for students to learn well. Teachers have to understand their needs, abilities and learning styles so that they can design meaningful, challenging lessons which will arouse their interest.

- ***Maximising engagement***

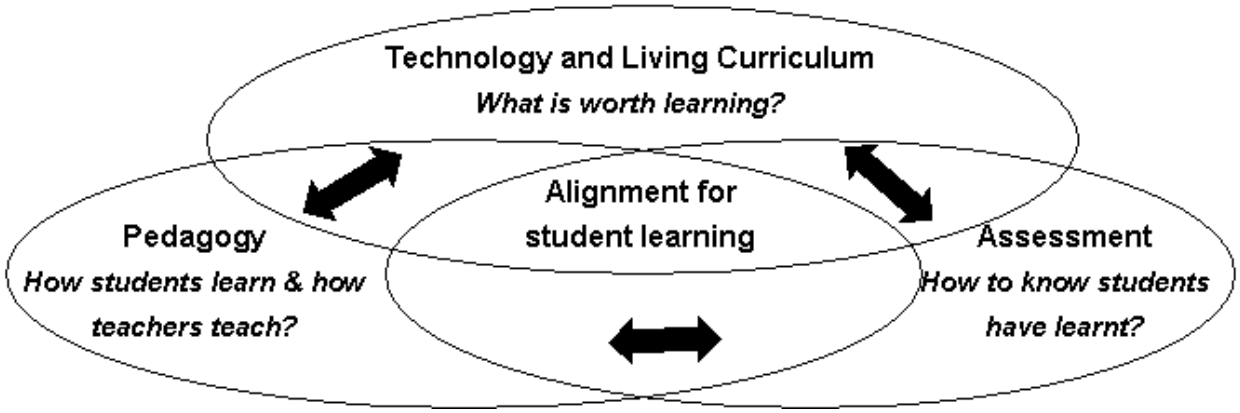
  It is important for all students to be engaged mentally in what they are doing. Students are more likely to engage actively in learning when they are involved in experiential learning in simulated or authentic contexts.

- ***Teaching for independent, self-directed learning***

  The ultimate goal of education is to enable students to be active and reflective learners with the generic skills for meeting future challenges. A wide variety of learning tasks and activities in authentic contexts should be designed to assist students to learn independently. Students are expected to take responsibility for their learning, and teachers can promote self-directed learning by encouraging them to work on projects of interest to them as they progress to senior forms.

To enhance knowledge-building, develop generic skills and foster positive values and attitudes, it is important to recognise that curriculum, pedagogy and assessment are interrelated. The following diagram illustrates the nature of this inter-relationship:

Figure 4.2 The "trinity" of student learning in schools



4.3 Approaches and Strategies

Given the diversity of students' needs, learning styles and abilities, and the wide range of objectives to be achieved in each lesson, there is no single approach or strategy that can fit all the requirements. For the Technology and Learning curriculum, teachers need to employ a mixture of approaches and strategies to develop students' understanding and generic skills.

Different students learn better in different ways - by seeing or hearing, reflecting or acting, reasoning logically or intuitively, memorising and visualising, and drawing analogies. Teachers are encouraged to consider the following when planning their lessons:

- Student exploration should be encouraged
- Opportunities should be provided for students to discuss and express their ideas among themselves
- Students' questions and comments should be the focus of classroom discourse and they should be encouraged to use a variety of means and media to communicate their ideas
- Students should be encouraged to offer speculative answers to challenging questions without criticism in a risk-free classroom climate
- Relevant illustrative examples should be used to enable students to feel that their learning is meaningful to their lives

The following are examples – but are not intended to be exhaustive – of some of the learning

and teaching approaches that promote student learning in Technology and Living.

- **Social inquiry approach**

  This approach is applicable to tasks which involve discussion and analysis of the implications or impact of a range of factors on certain issues. There are six stages:

  - orientation to the case
  - identifying the issues
  - taking a position
  - exploring the stance underlying the position taken
  - refining and qualifying the position
  - testing assumptions about facts, definitions, and consequences

  Please refer to Example 3 in Appendix 1 and Example 3 in Appendix 2.

- **Experiential learning**

  "Experience" is the focal point in this approach. Students are encouraged to reflect on their experience and process their reflections to facilitate learning. The four features in this learning cycle are:

  - concrete experience – students are exposed to new experiences, such as carrying out tests, or surveys examining different issues and cases
  - reflective observation – they reflect on their experience from different perspectives and make constructive comments
  - abstract conceptualisation – they form and process ideas and integrate them into logical theories
  - active experimentation – they use theories to solve problems and make decisions, and test theories in a new situation, which takes the students back to the start of the cycle again

- **Discovery approach**

  This approach guides students to learn Technology and Living through a systematic and logical enquiry process. They learn to develop hypotheses for experiments and mini-studies, and analyse and interpret findings by induction or deduction before drawing evidence-based conclusions. Please refer to Example 3 in Appendix 1 and Example 3 in

Appendix 2.

- **Cooperative learning**

Cooperative learning implies that students learn together through discussion or group work is an effective way of involving all students in purposeful, interactive learning. As our culture does not encourage individualism, students are used to working with their peers for a common goal.

Students work together to maximise their own and each other's learning. Cooperative learning results in higher achievement and greater productivity as students are not competing with each other and thus can concentrate on completing tasks. They work in a supportive way to develop attributes (such as social competence and self-esteem) which are essential to the well-being of the individual, family and society.

In Technology and Living lessons, students often work in groups to carry out tasks such as experiments, food preparation and design projects. Working cooperatively helps students to see that they can reach their learning goals by supporting each other.
The main features of cooperative learning are:

- positive interdependence – students work together in groups, with assigned roles to achieve common goals
- face-to-face interaction between the students – they develop oral communication skills and other interpersonal skills
- individual accountability for learning and for helping others to learn through a given task
- group processing – they are encouraged to reflect on how well their group is functioning in working towards its learning goals

The critical components include:

- division of labour by consent, within-group explanations, and equitable sharing of information
- recognition for both the group and for individuals within it; each student must feel that his / her contributions to the group are recognised

Learning and teaching strategies

In addition, the table below suggests some learning and teaching strategies that facilitate effective learning and teaching of senior secondary Technology and Living, but they are no means exhaustive.

Teaching approaches	Description	Topics (examples)
Lecturing	• This strategy could be used every now and then but not as the predominant mode of teaching. • It provides opportunities for teachers to emphasise important ideas, present the most up-to-date information, and give personal interpretations of subject-matter. • Teachers should also note that as lecturing is teacher-directed and student activity is mainly passive, the attention span of students may be limited. Some students, because of their preferred learning style, may not readily assimilate the lecture content.	**Compulsory Part** (a) Family dimension ● What is a family? ● Family structures (b) Nutrition, diet and health concerns ● Nutrients and water Complements laboratory experiments
Questioning	• Questioning is very useful for guiding students' thinking and is an important feature of learning and teaching activities. • Questions which call for different levels of thinking should be planned and asked to encourage the participation of both less able and capable students. • Thought-provoking questions can encourage logical and in-depth analysis. • This challenges students to back up their views with evidence. • Encouragement and reinforcement should be given to students with good responses.	Any issue that requires the exploration of reasons and factors Open-ended questions such as: **Compulsory Part** (a) Family dimension ● What factors affect family ties and lifestyles in Hong Kong? (d) Consumer behaviour in clothing choices and implications ● How can you strike a

Teaching approaches	Description	Topics (examples)
		balance between having clothing for psychological and physical needs? **Elective Part** (c) Food product development ● Why is market research important for product development?
Demonstration	• It can be live, video or multimedia, and is good for illustrating procedures, explaining new techniques and setting the required standards. • Students are encouraged to explore certain skills in food preparation or garment construction by means of viewing video clips on their own before practical work. • Spot demonstrations instead of full ones are preferred, as they save time and make the lessons more focused.	**Compulsory Part** (b) Nutrition, diet and health concerns ● Carry out laboratory experiments and practical work on diet and meal planning.
Discussion	• This allows students to share and compare views, ideas and knowledge with peers. • It encourages students to think from wider perspectives to generate solutions and provides opportunities for students to demonstrate their communication skills.	**Compulsory Part** (b) Nutrition, diet and health concerns ● Compare the similarities and differences between the nutritional requirements and dietary needs of individuals / family members.

Teaching approaches	Description	Topics (examples)
		(d) Consumer behaviour in food choices and implications ● Discuss how lifestyle and cultural influences affect our food/clothing choices. ● Review your moral roles and social responsibilities as a consumer.
Field Learning	• It enables students to explore the business world and helps to provide exposure to the realities of the workplace.	**Elective Part** (c) Apparel industry ● Arrange visits or attachments to commercial organisations to understand the industrial and commercial practices in clothing design, development and manufacture.

4.4 Interaction

Interaction enables students to articulate their thinking, explore whether they have understood a thing properly or what they know and do not know, try out their ideas or assumptions to find answers and clear up confusions, to look for reaction and viewpoints from others to refine their thinking or ideas.

Interaction in the form of talk or dialogue plays a very significant role in enhancing student learning. Talk can take place in different settings, e.g. whole-class talk, teacher-led group talk, pupil-led group talk, teacher-pupil individual talk and pupil-pupil (paired) individual talk. In

addition to imparting information, explaining ideas and principles, giving instructions, asking questions and providing diagnostic feedback, teachers need to focus on specific curriculum goals and learning targets in ways that promote cognitively challenging interaction. Feedback that illuminates and clarifies misunderstanding, stimulates analytical thinking, and encourages imaginative responses provides a learning environment in which students can excel. Noted below are some examples of indicators to illustrate what happens when effective interaction is carried out:

- questions elicit evidence of students' understanding, and prompt and challenge their thinking
- students listen, look, reflect and evaluate actively though they are not speaking
- answers provoke further questions and are seen as the building blocks of dialogue rather than its terminal point
- feedback keeps the lines of enquiry open, and encourages students to articulate their ideas openly
- students are not afraid or ashamed of making mistakes, and realise that they can be a source of learning

4.5 Catering for Learner Diversity

Every student is unique. Each of them may have a different set of abilities and learning styles (e.g. mastery, interpersonal, understanding, self-expressive), social and cultural background, and each may possess a different combination of multiple intelligences (e.g. verbal-linguistic, logical-mathematical, musical, spatial, bodily- kinaesthetic, interpersonal, intra-personal, naturalist). Technology and Living teachers are therefore encouraged to adopt a wide variety of learning and teaching strategies / approaches and provide differentiated instructions in order to cater for students' differences and to facilitate their learning of abstract concepts, and to develop their higher order thinking skills.

Teachers need to pay particular attention to students with special educational needs (SEN) by providing a supportive learning environment for them. They should adapt the curriculum to their needs and make appropriate physical arrangements to facilitate their learning. For instance, teachers should arrange for students who have hearing difficulties to sit close to them, and provide texts with large print for those with a visual impairment.

Gifted students should be given more challenging learning and assessment tasks which extend beyond the basic senior secondary Technology and Living curriculum – such as in-depth studies and complex problems which require creative solutions. They can also be

invited to serve as mentors for other students.

Chapter 5 Assessment

This chapter discusses the roles of assessment in learning and teaching Technology and Living, the principles that should guide assessment of the subject and the need for both formative and summative assessment. It also provides guidance on internal assessment and details regarding the public assessment of Technology and Living. Finally, information is given on how standards are established and maintained, and how results are reported with reference to these standards. General guidance on assessment can be found in the *Senior Secondary Curriculum Guide* (2009).

5.1 The Roles of Assessment

Assessment is the practice of collecting evidence of student learning. It is a vital and integral part of classroom instruction, and serves several purposes and audiences.

First and foremost, it gives feedback to students, teachers, schools and parents on the effectiveness of teaching and on students' strengths and weaknesses in learning.

Second, it provides information to schools, school systems, government, tertiary institutions and employers to enable them to monitor standards and to facilitate selection decisions.

The most important role of assessment is in promoting learning and monitoring students' progress. However, in the senior secondary years, the more public roles of assessment for certification and selection come to the fore. Inevitably, these imply high stakes uses of assessment since the results are typically employed to make critical decisions about individuals.

The Hong Kong Diploma of Secondary Education (HKDSE) provides a common end-of-school credential that gives access to university study, work, and further education and training. It summarises student performance in the four core subjects and in various elective subjects, including both discipline-oriented subjects such as Technology and Living and the new Applied Learning courses. It needs to be interpreted in conjunction with other information about students in the Student Learning Profile.

5.2 Formative and Summative Assessment

It is useful to distinguish between the two main purposes of assessment, namely "assessment *for* learning" and "assessment *of* learning".

"Assessment *for* learning" is concerned with obtaining feedback on learning and teaching, and utilising this to make learning more effective and introduce any necessary changes to teaching strategies. We refer to this kind of assessment as "formative assessment" because it is all about forming or shaping learning and teaching. Formative assessment should take place on a daily basis and typically involves close attention to small "chunks" of learning.

"Assessment *of* learning" is concerned with determining progress in learning, and is referred to as "summative" assessment, because it is all about summarising how much learning has taken place. Summative assessment is normally undertaken at the conclusion of a significant period of instruction (e.g. at the end of the year, or at a key stage of schooling) and reviews much larger "chunks" of learning.

In practice, a sharp distinction cannot always be made between formative and summative assessment, because the same assessment can in some circumstances serve both formative and summative purposes. Teachers can refer to the SSCG for further discussion of formative and summative assessment.

Formative assessment should also be distinguished from continuous assessment. The former refers to the provision of feedback to improve learning and teaching based on formal or informal assessment of student performance, while the latter refers to the assessment of students' ongoing work and may involve no provision of feedback that helps to promote better learning and teaching. For example, accumulating results in class tests carried out on a weekly basis, without giving students constructive feedback, may neither be effective formative assessment nor meaningful summative assessment.

There are good educational reasons why formative assessment should be given more attention and accorded a higher status than summative assessment, on which schools tended to place a greater emphasis in the past. There is research evidence on the beneficial effects of formative assessment when used for refining decision-making in teaching and generating feedback to improve learning. For this reason, the CDC report *Learning to Learn – The Way Forward in Curriculum Development* (2001) recommended that there should be a change in assessment practices, with schools placing due emphasis on formative assessment to make assessment *for* learning an integral part of classroom teaching.

It is recognised, however, that the primary purpose of public assessment, which includes both public examinations and moderated School-based Assessments (SBA), is to provide summative assessments of the learning of each student. While it is desirable that students are exposed to SBA tasks in a low-stakes context, and that they benefit from practice and experience with such tasks for formative assessment purposes without penalty, similar tasks will need to be administered subsequently as part of the public assessment process to generate marks to summarise the learning of students (i.e. for summative assessment purposes).

Another distinction to be made is between internal assessment and public assessment. Internal assessment refers to the assessment practices that teachers and schools employ as part of the ongoing learning and teaching process during the three years of senior secondary studies. In contrast, public assessment refers to the assessment conducted as part of the assessment process in place for all schools. Within the context of the HKDSE, this means both the public examinations and the moderated SBA conducted or supervised by the HKEAA. On balance, internal assessment should be more formative, whereas public assessment tends to be more summative. Nevertheless, this need not be seen as a simple dichotomy. The inclusion of SBA in public assessment is an attempt to enhance formative assessment or assessment *for* learning within the context of the HKDSE.

5.3 Assessment Objectives

The assessment objectives are closely aligned with the curriculum framework and the broad learning outcomes presented in earlier chapters. The assessments in Technology and Living aim to evaluate students' ability to:

- demonstrate knowledge and understanding of concepts, principles, theories and issues presented in the specified content
- apply such knowledge and understanding to analyse and solve problems which may involve familiar and unfamiliar situations
- collect, select, analyse and evaluate information in relation to the specified subject content
- evaluate the potential and limitation of evidence and arguments, make reasoned judgements about their relevance to particular situations and present supported conclusions
- demonstrate communication skills using a wide variety of methods and present information in a logical and coherent structure appropriate to the nature of the activity
- plan and carry out a course of action with relevant technological and scientific

knowledge and skills to achieve an effective result
- act responsibly with positive values and attitudes in contributing to the well-being of individuals, families and society

The majority of the above assessment objectives are applicable to both internal and public assessment, while some may not be applicable to public assessment. Those objectives applicable to public assessment are listed in the Regulations and Assessment Frameworks published by the HKEAA.

5.4 Internal Assessment

This section presents the guiding principles that can be used as the basis for designing internal assessment and some common assessment practices for Technology and Living. Some of these principles are common to both internal and public assessment.

5.4.1 Guiding principles

Internal assessment practices should be aligned with curriculum planning, teaching progression, student abilities and local school contexts. The information collected will help to motivate, promote and monitor student learning, and will also help teachers to find ways of promoting more effective learning and teaching.

- ***Alignment with the learning objectives***

  A range of assessment practices should be used to assess the achievement of different learning objectives for whole-person development. The weighting given to different areas in internal assessment should be discussed and agreed among teachers. The assessment purposes and criteria should also be made known to students so that they can have a full understanding of what is expected of them.

- ***Catering for the range of student ability***

  Assessment practices incorporating different levels of difficulty and in diverse modes should be used to cater for students with different aptitudes and abilities. This helps to ensure that the more able students are challenged to develop their full potential and the less able ones are encouraged to sustain their interest and succeed in learning.

- ***Tracking progress over time***

  As internal assessment should not be a one-off exercise, schools are encouraged to use practices that can track learning progress over time (e.g. portfolios). Assessment practices of this kind allow students to set their own incremental targets and manage their own pace of learning, which will have a positive impact on their commitment to learning.

- ***Timely and encouraging feedback***

  Teachers should provide timely and encouraging feedback through a variety of means, such as constructive verbal comments during classroom activities and written remarks on assignments. Such feedback helps students to sustain their momentum in learning, and to identify their strengths and weaknesses.

- ***Making reference to the school's context***

  As learning is more meaningful when the content or process is linked to a setting which is familiar to students, schools are encouraged to design assessment tasks that make reference to the school's own context (e.g. its location, relationship with the community, and mission).

- ***Making reference to current progress in student learning***

  Internal assessment tasks should be designed with reference to students' current progress, as this helps to overcome obstacles that may have a cumulative negative impact on learning. Teachers should be mindful in particular of concepts and skills which form the basis for further development in learning.

- ***Feedback from peers and from the students themselves***

  In addition to giving feedback, teachers should also provide opportunities for peer assessment and self-assessment in student learning. The former enables students to learn among themselves, and the latter promotes reflective thinking which is vital for students' lifelong learning.

- ***Appropriate use of assessment information to provide feedback***

  Internal assessment provides a rich source of data for providing evidence-based feedback on learning in a formative manner.

5.4.2 Internal assessment practices

A range of assessment practices, such as open book tests, oral presentation, practical work and projects, suited to Technology and Living should be used to promote the attainment of the various learning outcomes. However, teachers should note that these practices should be an integral part of learning and teaching, not "add-on" activities.

- ***Open book tests***

  Questions for this type of test should aim to stimulate the use of reference materials and to help students to organise their ideas. Students could have access to the source material (e.g. food tables) throughout the test.

- ***Oral presentations***

  This can be a valuable supplement to conventional assessment methods and need not be seen as a test to be used in language subjects only. The focus can be on the effectiveness of the presentation for specific target groups in terms of the messages or information delivered, the interaction and responses to questions raised by the audience (e.g. peers, teachers).

- ***Practical work***

  Practical work (e.g. experiment, meal plan or garment construction) provides a meaningful context for students to apply their knowledge and skills. It offers students "hands-on" experience and opportunities to show their knowledge, skills and attitudes, for example, resourcefulness, interest, ingenuity, originality, creativity, appreciation and perseverance.

- ***Projects***

  A project is any piece of extended work from which the constraints of lesson time have been largely removed. Carrying out project work provides an opportunity for students to study a topic of interest in depth, and teachers may wish to have their students go through the following steps:

  - Clarifying the areas of interest
  - Establishing a framework for enquiry
  - Finding out and selecting resource materials
  - Organising data
  - Presenting findings

5.5 Public Assessment

5.5.1 Guiding principles

Some principles guiding public assessment are outlined below for teachers' reference.

- ***Alignment with the curriculum***

  The outcomes that are assessed and examined through the HKDSE should be aligned with the aims, objectives and intended learning outcomes of the senior secondary curriculum. To enhance the validity of public assessment, the assessment procedures should address the range of valued learning outcomes, and not just those that are assessable through external written examinations. Thus, the SBA tasks designed for Technology and Living also include practical work such as experiments, practical works and projects for students to demonstrate their application of knowledge and skills learned in simulated, authentic and novel situations.

  Assessment in the public examination for Technology and Living should take into account the aims and objectives outlined in Chapter One and Two, and in particular the four dimensions of student learning in Technology Education, viz:

  - conceptual – knowledge and understanding of the relevant concepts and procedures
  - procedural – knowing how to do something, what to do and when to do it
  - societal – seeing the inter-relationships between science, technology, environment and groups of people
  - technical – skills related to manual / practical techniques

The SBA component should allow assessment of these four dimensions and integrate them into tasks that students have to complete.

- ***Fairness, objectivity and reliability***

  Students should be assessed in ways that are fair and are not biased against particular groups of students. A characteristic of fair assessment is that it is objective and under the control of an independent examining authority that is impartial and open to public scrutiny. Fairness also implies that assessments provide a reliable measure of each student's performance in a given subject so that, if they were to be repeated, very similar results would be obtained.

- ***Inclusiveness***

  The assessments and examinations in the HKDSE need to accommodate the full spectrum of student aptitude and ability.

  The public examination for Technology and Living will be designed in such a way that students are given an opportunity to demonstrate foundation knowledge in the Compulsory Part and knowledge of selected areas in the Elective Part through various question types, including those testing higher-order thinking skills. At the same time, the SBA component offers room for a wider range of activities to cater for the differing preferences and readiness among students.

- ***Standards-referencing***

  The reporting system is "standards-referenced", i.e. student performance is matched against standards which indicate what students have to know and be able to do to merit a certain level of performance. Level descriptors for Technology and Living provide information about the typical performance of candidates at different levels.

- ***Informativeness***

  The HKDSE qualification and the associated assessment and examinations system provide useful information to all parties. Firstly, it provides feedback to students on their performance and to teachers and schools on the quality of the teaching provided. Secondly, it communicates to parents, tertiary institutions, employers and the public at large what it is that students know and are able to do, in terms of how their performance

matches the standards. Thirdly, it facilitates selection decisions that are fair and defensible.

5.5.2 Assessment design

The tables below show the assessment design of Technology and Living with effect from the 2016 HKDSE Examination. The assessment design is subject to continual refinement in the light of feedback from live examinations. Full details are provided in the Regulations and Assessment Frameworks for the year of the examination and other supplementary documents, which are available on the HKEAA website (www.hkeaa.edu.hk/en/hkdse/assessment/assessment_framework/).

2016 to 2018 HKDSE Examinations

Component	Part	Weighting	Duration
Public examination	Paper 1 Compulsory part	43%	1½ hours
	Paper 2 Elective part (including knowledge from compulsory part)	57%	2 hours

With effect from the 2019 HKDSE Examination

Component	Part	Weighting	Duration
Public examination	Paper 1 Compulsory part	30%	1½ hours
	Paper 2 Elective part (including knowledge from compulsory part)	40%	2 hours
School-based assessment (SBA)	• Prescribed task • Project for Food Science and Technology strand OR Design folio for Fashion, Clothing and Textiles strand	30%	

5.5.3 Public examinations

The overall aim of the public examination is to assess students' ability to demonstrate their knowledge and understanding in different areas of Food Science and Technology / Fashion, Clothing and Textiles, and apply this to familiar and unfamiliar situations.

Different types of items are used to assess students' performance in a broad range of skills and abilities. The types of items include multiple-choice questions, short questions, structured data-response questions and essays. Schools may refer to the live examination papers regarding the format of the examination and the standards at which the questions are pitched.

5.5.4 School-based Assessment (SBA)

In the context of public assessment, SBA refers to assessments administered in schools and marked by the students' own teachers. The primary rationale for SBA in Technology and Living is to enhance the validity of the overall assessment by including students' practical skills and other generic skills.

There are, however, some additional reasons for SBA in Technology and Living. For example, it reduces dependence on the results of public examinations, which may not always provide the most reliable indication of the actual abilities of candidates. Obtaining assessments based on student performance over an extended period of time and developed by those who know the students best – their subject teachers – provides a more *reliable* assessment of each student.

Another reason for including SBA is to promote a *positive* "*backwash effect*" *on students, teachers and school staff*. Within Technology and Living, SBA can serve to motivate students by requiring them to engage in meaningful activities; and for teachers, it can reinforce curriculum aims and good teaching practice, and provide structure and significance to an activity they are in any case involved in on a daily basis, namely assessing their own students.

The different SBA tasks designed for Technology and Living aims to provide opportunities for students to put theories into real practices, demonstrate and apply their knowledge and practical skills through other forms and means over an extended period of time. They can also choose specific areas of interests for more in-depth studies and develop their researching skills in collecting, analysing and evaluating information and data from both primary and secondary sources as well as making reasoned judgements and suggestions. Students will be assessed by their teachers on their abilities in a whole range of skills covering the four dimensions of student learning in Technology Education throughout S5 and S6.

It should be noted that SBA is not an "add-on" element in the curriculum. The modes of SBA above are normal in-class and out-of-class activities suggested in the curriculum. The requirement to implement the SBA has taken into consideration the wide range of student ability and efforts have been made to avoid unduly increasing the workload of both teachers and students. Detailed information on the requirements and implementation of the SBA and samples of assessment tasks are provided to teachers by the HKEAA.

Implementation of SBA in Technology and Living will be postponed to the 2019 HKDSE Examination. This will allow sufficient time for schools to get familiar with the revised curriculum and assessment arrangements as well as the conduct of the SBA.

5.5.5 Standards and reporting of results

Standards-referenced reporting is adopted for the HKDSE. What this means is that candidates' levels of performance are reported with reference to a set of standards as defined by cut scores on the mark scale for a given subject. Standards referencing relates to the way in which results are reported and does not involve any changes in how teachers or examiners mark student work. The set of standards for a given subject can be represented diagrammatically as shown in Figure 5.1.

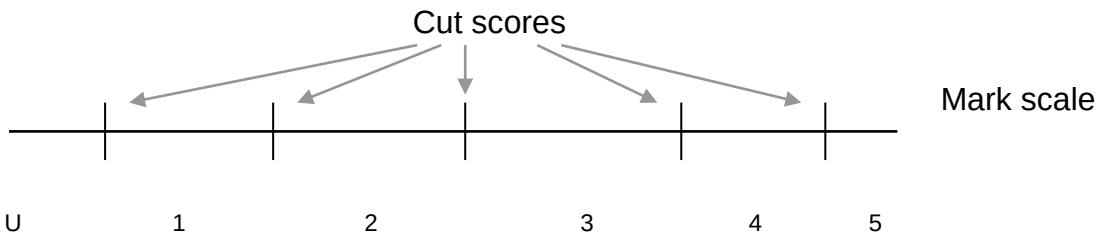


Figure 5.1 Defining levels of performance via cut scores on the mark scale for a given subject

Within the context of the HKDSE there are five cut scores, which are used to distinguish five levels of performance (1–5), with 5 being the highest. A performance below the cut score for Level 1 is labelled as "Unclassified" (U).

For each of the five levels, a set of written descriptors has been developed to describe what the typical candidate performing at this level is able to do. The principle behind these descriptors is that they describe what typical candidates *can* do, not what they *cannot* do. In other words, they describe performance in positive rather than negative terms. These descriptors represent "on-average" statements and may not apply precisely to individuals, whose performance within a subject may be variable and span two or more levels. Samples of students' work at various levels of attainment are provided to illustrate the standards expected of them. These samples, when used together with the level descriptors, will clarify the standards expected at the various levels of attainment.

In setting standards for the HKDSE, Levels 4 and 5 are set with reference to the standards achieved by students awarded grades A–D in the HKALE. It needs to be stressed, however, that the intention is that the standards will remain constant over time – not the percentages awarded different levels, as these are free to vary in line with variations in overall student

performance. Referencing Levels 4 and 5 to the standards associated with the old grades A–D is important for ensuring a degree of continuity with past practice, for facilitating tertiary selection and for maintaining international recognition.

The overall level awarded to each candidate is made up of results in both the public examination and the SBA (if applicable). SBA results for Technology and Living are moderated based on the judgment of panels of external moderators, through the inspection of samples of students' work.

To provide finer discrimination for selection purposes, the Level 5 candidates with the best performance have their results annotated with the symbols ** and the next top group with the symbol *. The HKDSE certificate itself records the Level awarded to each candidate.

Chapter 6 Learning and Teaching Resources

This chapter discusses the importance of selecting and making effective use of learning and teaching resources to enhance student learning. Schools need to select, adapt and, where appropriate, develop the relevant resources to support student learning.

6.1 Purpose and Function of Learning and Teaching Resources

The purpose of learning and teaching resources for senior secondary Technology and Living is to provide a basis for students' learning experiences. For example, they can be used as tools to motivate and inspire students, provide information / discussion materials for them to understand, analyse, evaluate and reflect on, and to explore, construct and extend their knowledge. Thoughtful use of a wide range of well-designed learning and teaching resources can open up the 'space of learning' for students of different learning styles and abilities, strengthen students' generic skills, and cultivate positive values and attitudes which they can apply in making informed decisions and solving problems creatively. To keep pace with the fast-changing local and global contexts in food / textile science and technology and fashion trends, the study of senior secondary Technology and Living cannot rely solely on textbooks, but must also involve the use of various other types of print materials (e.g. reference books, journals, reports and newspapers) as well as audio-visual electronic sources (e.g. the Internet and other web-based resources). Please refer to Section 6.3 for further information on a range of resources.

6.2 Guiding Principles

It is important that Technology and Living teachers exercise their professional judgement in selecting and designing suitable learning and teaching materials for their students from the wide range of resources available. The following points highlight the guiding principles in this regard: Materials should:

- alignment
  - be in line with the aims, objectives, learning outcomes and core elements of the curriculum
- purposes
  - provide basic facts or information for discussion, investigation and self-study
- variety
  - provide a selection of learning and teaching material to cater for varied learning styles and abilities of students

- knowledge-building
  - build on students' prior knowledge and socio-economic background to provide useful scaffolding
- relevancy
  - provide content that is related to current issues
- accuracy
  - present the arguments that are grounded and supported with evidence
- reliability
  - find out whether the source of information is reliable, from official agencies or words by mouth
  - encourage students to take into consideration the reliability and accuracy of the related secondary source of information
- support effective learning and teaching strategies and the fostering of generic skills and independent learning
  - be thought provoking to motivate students to explore, experiment and engage actively in learning
- language used and level of difficulty
  - use correct language and be suitable for the cognitive level and ability of students
- safety
  - consider whether the chemicals to be used for experiments are safe for students and what precautions could be taken against accidents
- intellectual property right
  - conform to legal requirements when copying information from books, journals, documents and reports

6.3 Types of Resources

6.3.1 References

- ***Reference books and journals***

  Reference books and journals are a valuable source of information, and school libraries need to provide a good collection for teacher and student use. Appendix 3 provides a suggested list but it is not intended to be exhaustive. In addition, Technology and Living teachers should encourage their students to borrow reference materials from public libraries, resource centres of related government or non-government professional bodies.

- ***Government and non-government reports and publications***

  Government departments and non-government organisations provide an extensive range of resources for the learning and teaching of senior secondary Technology and Living. Students can, for example: extract information from government reports and publications; examine documents, such as legislation and policy papers and code of practices for food safety; and refer to the annual reports of government departments and research reports from professional bodies and tertiary education institutions. Case study analysis can also be used to demonstrate to students how legislation has been used successfully to protect the well-being of individuals, the community and the world.

6.3.2 EDB resources

To assist schools in managing curriculum change, EDB has provided them with a one-stop curriculum resources directory service at http://www.edb.gov.hk/cr. The directory provides a central pool of ready-to-use learning and teaching resources and useful references developed by EDB and other parties.

- ***Senior Secondary Curriculum Guide, Curriculum and Assessment Guide and Key Learning Area websites***

  The above documents and websites provide details and examples of curriculum design and implementation of the senior secondary Technology and Living curriculum. Teachers can refer to the curriculum aims, learning objectives, targets and outcomes, and suggested pedagogies when developing their teaching schemes, lesson plans, and learning and teaching materials.

- ***Learning and teaching kits***

  A series of learning and teaching kits for various topics – including teaching plans, teaching notes, worksheets and information sheets has been produced since 2007 to help teachers to implement the curriculum, and is available on the CDI website.

- ***Supplementary Notes***

  Supplementary notes to further elaborate the breadth and depth of Technology and Living curriculum and/or support learning, teaching and assessment, have been uploaded onto EDB website since June 2013.

- ***Web-based resources***

  The One-stop Portal for Learning and Teaching Resources (www.hkedcity.net/edbosp) facilitates teachers in their selection and development of learning and teaching resources to meet students' needs. Through this online portal, teachers will have quick access to a variety of digital resources related to Technology and Living curriculum. A series of Technology and Living assessment items is also available in the Assessment Tasks Reference (www.hkedcity.net/edbatr) which supports teachers in designing classroom assessments.

- ***English- Chinese Glossary of Terms***

  An "English-Chinese Glossary of Terms Commonly Used in the Teaching of Technology and Living" has been uploaded on the CDI webpage since 2007. Teachers could refer to the terms in preparing learning and teaching materials. They could also refer students to make reference to the glossary when appropriate. The glossary will also be updated from time to time.

- ***Funding***

  When using funding for the implementation of related learning and teaching activities, schools are advised to refer to the relevant and latest circulars issued by EDB.

6.3.3 The Internet and technology

- ***The Internet***

  The Internet opens up boundless possibilities for learning and teaching. It provides an instant global platform for students which enables them to explore issues related to food / fashion / textiles at various levels and from different perspectives, and to see their interconnectedness and implications. It also provides users with information for studying contemporary food / fashion / textile issues. For example, students can be asked to search for information on food safety provided by both local and overseas governments and compare them in terms of their impact on nutrition and health.

  However, both teachers and students should be aware of ethical and privacy issues

when using Internet information, and the need to check its reliability and validity.

- ***Multi-media resources***

  Self-made or commercially-produced multi-media resources such as video and audio clips can be effective tools for enhancing student learning. They can be used at the beginning of lessons as an introduction to a topic, as discussion pieces during lessons or summaries at the end, depending on teachers' purposes. A video showing a food / apparel production line and the operation of machinery on an industrial sites, for example will add interests to a lesson and make the learning content more understandable.

6.3.4 Community resources

In order to bring real-life issues into the classroom and provide opportunities for students to see and understand the application of what they have learned in authentic situations, teachers can make use of resources and support from the community and related professional bodies / organisations by, for example, arranging:

- interviews with professionals, alumni and parents who work in the food / fashion / textile sectors to understand their work and for related student coursework
- tours / field trips to business or non-profit-making organisations in the food / fashion industry or factories and production plants, so that students can find out more about the actual development and production of food and textile products
- visits to food / clothing / textile laboratories in, for example, tertiary institutions, resource or exhibition centres and public libraries to raise students' interest in the related areas and for in-depth study, when applicable
- visits to food expositions and fashion shows to allow students to find out more about the trends in these areas of development, and for inspiration
- campaigns or promotion programmes for the aged, youth centres and child care centres for students to practise their generic skills

6.4 Flexible Use of Learning and Teaching Resources

To cater for the diverse learning styles, abilities and interests of students, and ensure that all students learn as effectively as possible, Technology and Living teachers need to use a mixture of learning and teaching resources flexibly – including, for instance, both first-hand information (e.g. student surveys using self-designed questionnaires to conduct survey) and

second-hand information (from reference books, etc.); graphics / pictorials and texts. The resources can be used for brainstorming, add on task, class discussion of current food / clothing issues and case studies, where appropriate. In general, rather than merely memorising information, students should use the information from learning and teaching materials to reinforce their understanding and widen their perspectives. They should be encouraged to seek deeper understanding through working on the information provided, applying their knowledge and carrying out in-depth studies. The ability to synthesise and transfer learning is a good indicator of effective and flexible use of learning and teaching resources. Please refer to the example in Appendix 3.

6.5 Resource Management

Given the wide range of learning and teaching resources available, Technology and Living panel chairpersons and teachers need to work together to set up a systematic and effective system to manage and share the wide range of resources among teachers within the panel and with other teachers in the school.

6.5.1 School-based data resource bank

Many schools already have a data bank on the school networks; and where this is not available, teachers should ask their schools to consider establishing one. Teachers should add new resources from time to time and request technical support from the school. Some of the benefits of a databank are:

- Teachers and students can conveniently share learning and teaching resources through the Intranet or other means within the school (e.g. shared reading and project work)
- When an interactive platform is created for communication, this can result in more frequent interaction, as shy students who are quiet in class may feel more comfortable with this means of communicating.

6.5.2 A learning community

Teachers should reflect on the effectiveness of the types of resources they are using and can form a learning community with other professionals to exchange ideas and experiences with them in discussion forums on the Web or in face-to-face sharing sessions.

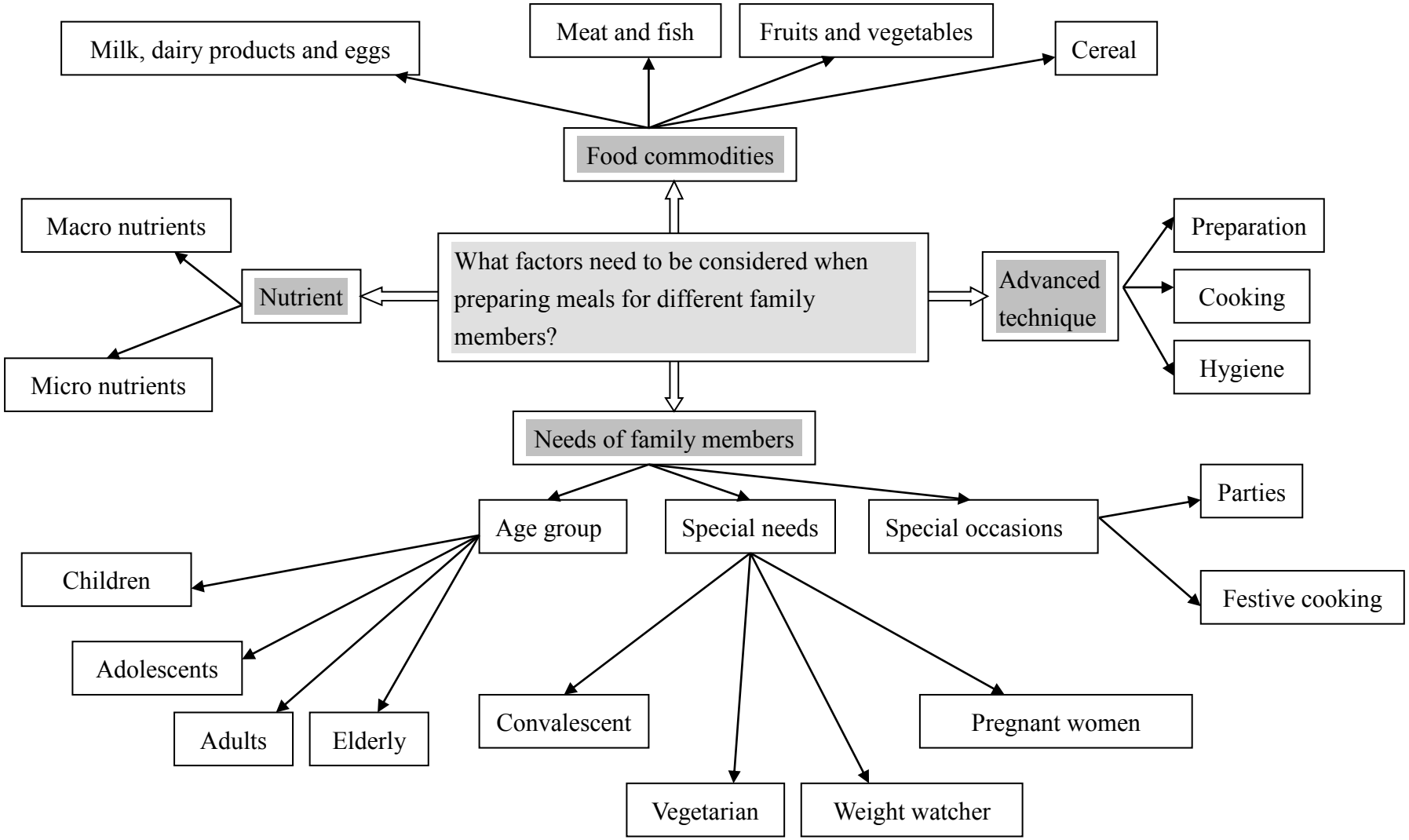
6.5.3 School librarians and laboratory technicians

School librarians are valuable resource persons for teachers and students, and teachers should obtain up-to-date information from them about newly published books and materials.

Technology and Living teachers also need to cooperate with school laboratory technicians to ensure that their requirements for experimental work are met.

Deciding what to eat

Example 1 Concept map of meal planning



Example 2 Scheme of work

Level: S4–5
Duration: 24 weeks
Number of tasks: 4 to 6

***Prior knowledge*:**

- Family dimension
- Consumer behaviour in food choices and implications
  - factors influencing consumer choices of food
- Nutrition, diet and health concerns
  - nutrients and water
  - health and nutrition

***Learning outcomes*:**

Students are able to:

- understand the recommended food intake for individuals at each stage of the life cycle and realise that the meeting of special dietary needs is necessary for ensuring the nutritional well-being of individuals and all family members
- identify the nutritional requirements for individuals at each stage of the life cycle, including special dietary needs
- plan and prepare meals by considering the nutritional value and use of food commodities
- examine how food choice reflects social roles and lifestyles through serving meals for different occasions
- propose dietary plans to improve the health of individuals by considering their nutritional needs
- prepare and adapt food to satisfy the needs of individuals
- evaluate different influences on the nutritional status of individuals
- examine the complexity and implications of consumer behaviour in food choice from individual, family and social perspectives

Investigate the dietary needs of different family members by using a variety of food commodities and techniques *in a hygienic way.*

Needs of family members	**Food commodities**	**Techniques**
Age group • children • adolescents • adults • the elderly *Special needs* • pregnant women • convalescents • vegetarians • slimming diets *Special occasions* • parties • festive cooking	• milk, dairy products and eggs • meat and poultry • fish and seafood • soya bean and soya bean products • fruits and vegetables • cereals and grains	• preparation • cooking • serving • hygienic practices

Example 3 Suggested learning activities

Investigate the dietary needs of children by using eggs and dairy products and a variety of preparation and cooking techniques *in a hygienic way*.

Duration: 16 periods (4 weeks)

Lesson unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
1	2 periods • dietary requirements • meal planning • eggs • milk and dairy products	• what, why and how to maintain a balanced diet • dietary guidelines • recommended daily intake for children • classifications, functions and sources of macro and micro nutrients	**Theory** • The teacher introduces the dietary needs of children. • Students discuss the general principles of meal planning and special considerations in preparing children's meals. • By referring to the food composition table, students find out the nutritive value of eggs and different types of milk and dairy products. • The teacher introduces the structure of eggs and discusses the uses of eggs, milk and cheese in diet and food preparation.	Learning as a product Teaching as direct instruction

Lesson unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
			• The teacher discusses the choice and storage of eggs, milk and cheese.	Social Inquiry Approach
2	2 periods • a current social issue	• relationship between eating habits and health • urban nutritional issues, such as malnutrition • causes and preventative strategies and measures for nutritional disorders and diet-related diseases commonly found in children (e.g. obesity)	**Social issues related to eating habits / dietary problems of children** • The teacher shows several articles which report on the eating habits of children in Hong Kong. • Students discuss the potential problem and suggest ways for improvement. Learning as a process	• newspaper cuttings • students are divided into groups to discuss the issue from different perspectives, including: social changes in lifestyle; and scientific and technological developments in the food supply industry

Lesson unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
3	4 periods • properties of egg, milk and cheese	• different cooking methods, such as boiling, steaming, frying, baking	**Food tests / investigation** • Students carry out the tests: - to become familiar with various methods of cooking eggs - to explore the use of egg white foams in food preparation - to study the effects of heat and acid on milk - to understand how to cook cheese • Students prepare reports for oral presentation.	• Students are divided into groups and conduct the four tests.
	2 periods • knowledge-sharing	• the human digestive system • inter-relationship between nutrients, e.g. protein and pH value	**Presentation and discussion of findings** • Students present their findings. The teacher draws conclusions and discusses: - the effect of heat and digestibility - uses in food preparation	

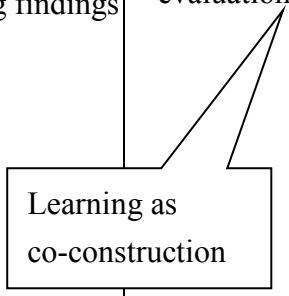
Discovery Approach

Learning as a process

Teaching as enquiry

Learning as co-construction

Lesson unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
4	2 periods • meal planning	• meal patterns • nutrition and diet • factors influencing consumer choices of food	**Exploring meals for children** • Students search for recipes suitable for children's meals and dishes using eggs and / or milk and dairy products. • Students have to plan a weekly menu. • Students prepare a work plan for a selected meal from the menu.	• students have to examine the health concerns and nutritional needs of children • students consider the principles of meal planning when selecting or designing meals for children
	2 periods • practical work	• basic food preparation skills	**Implementation of work plan** • Students prepare the selected meal and serve it. • Students give suggestions for improvement. Teaching as co-construction	• students are divided into groups to carry out practical work • the teacher may demonstrate techniques in food preparation and cooking on a demand basis

Lesson unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
	2 periods • presentation	• skills in oral presentation • IT skills in presenting findings	**Report and reflection** • Students present their plans and evaluations orally.  	The presentations will include: • evaluation of the suitability of dishes / meals to address social issues relating to eating habits / dietary problems of children • explanation of factors affecting the choice of dishes / meals (family ties and lifestyles and consumer behaviour in food choice) • evaluation of the flow of the work plan (e.g. planning and organising work, cooperation and coordination among individuals)

Explanatory notes for teachers and students

Stage 1 – Guided approach / close supervision (at the beginning of the unit)

Teachers' roles:

The teachers:

(1) prepare most of the teaching materials, including teaching notes on
- principles of meal planning
- the composition, structure, nutritional value and uses of egg, milk and dairy products
- a set of experiments to supplement the curriculum
- newspaper cuttings, articles etc. on the eating habits of Hong Kong children for discussion
- recipes for reference

(2) act as instructors during lectures

(3) are facilitators during brain-storming and group discussion

(4) are supervisors during practical and experimental work

Students' roles:

The students should:

(1) be reflective learners during theory work

(2) be active participants in brain-storming and group discussion sessions

(3) show initiative in collecting relevant information on the topics

(4) develop and carry out their work plans

(5) evaluate and modify their plans

Stage 2 – Less guidance

Teachers' roles:

The teachers:

(1) provide outlines for data collection on different age groups and food commodities

(2) prepare a set of experiments to supplement the curriculum

(3) facilitate group discussion

(4) give feedback for discussion and oral presentations

(5) supervise practical and experimental work

(6) consolidate the knowledge (theory part) and skills (practical work) achieved

(7) provide feedback on students' presentations and attitudes to work

Students' roles:

The students:

(1) work in groups on data collection

(2) submit findings on specified age groups and food commodities

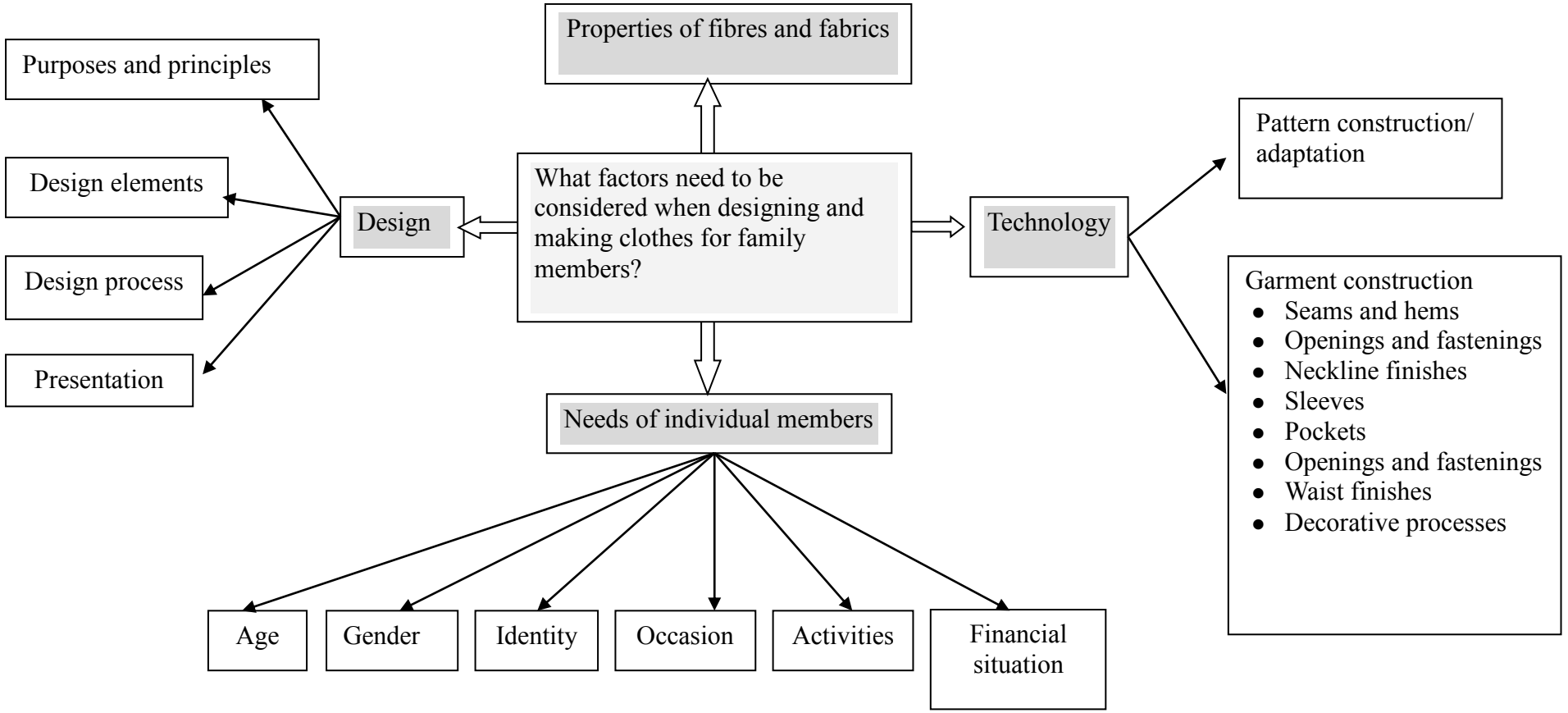
(3) choose relevant experiments to support the food science principles

(4) select appropriate recipes for meal preparation

(5) propose meal plans, and carry out evaluations

Deciding what to wear

Example 1 Concept map for fashion and design



Example 2 Scheme of work

Level: S4–5
Duration: 24 weeks (4 periods x 24 weeks = 96 periods, 40 minutes per period), 4 –6 themes

Prior knowledge:

- Family dimension
- Consumer behaviour in choice of fashion and implications
  - individual and family considerations
  - social, cultural, environmental, scientific and technological developments which influence the choice of clothing
- Materials for clothing and textiles
  - properties of different types of fibre
  - suitability of different types of fibre
- Fabric construction
  - types of fabric construction
  - types and characteristics of different types of colouration
  - finishing
- Fashion design basics
  - purposes and principles of fashion design
  - fashion design elements
  - fashion design processes

Learning outcomes:

Students are able to:

- make suggestions on developing suitable textile products for different age groups, and meeting the needs of individuals for their use in different situations
- understand how fashion trends are created and know how to gain ideas and inspiration from the environment (e.g. the natural world, different cultures, traditional patterns)
- identify how different kinds of fabrics and newly developed textile materials can help to meet modern lifestyles
- translate needs into designs that protect the users and enhance individual appearance
- produce a storyboard of the results of the textile experiments and the exploration process, including a series of sketches, diagrams or photos to show how they want the product design to develop through the main stages in processing
- examine the complexity and implications of consumer behaviour in choice of clothing from individual, family and social perspectives

Investigating suitable clothing and materials to fulfill the needs of individuals

Needs of individuals	**Factors affecting the choice of clothing**	**Fashion design**	**Fabric quality**	**Techniques and appropriate industrial technologies**
• age group - babies - toddlers - adolescents - adults - the elderly • different figure types • gender • occasions - parties - outdoor activities • financial situation	• physical • psychological • social • economic • environmental • personal image • fashion trend • technological	• purposes and principles • fashion design elements • fashion design process	• strength • elongation • elasticity • abrasion resistance • resilience • absorbency • dimensional stability • wrinkle resistance • insulation • water repellence • sun resistance	• pattern construction • construction and fitting know-how - seam and hem - opening and fastening - neckline (facing, collar, etc.) - sleeve - waist finishes - fullness arrangement - pockets - decorative processes

Example Suggested themes – environmental issues, causal wear, formal outfits, innovative design / crossover

Example 3 Suggested learning activities

Theme: Environmental issues
Duration: 22–24 periods

Lesson Unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
1	2 periods • environmental issues		• Discussion on issues related to environmental items, such as: - 3 R (reduce, reuse, recycle) - green textiles - protection from pollution problems (such as noise, sound, air) - protection from direct sunburn due to damage of the Ozone layer	• newspaper / magazine cuttings; video to be used • students divided into groups to discuss and present their conclusions from the materials provided

Learning as a product

Social Inquiry Approach

Teaching as direct instruction

Lesson Unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
2	8 periods • collecting and analysing data • experimental studies of fabric quality • fashion design • fashion design presentation	• fashion design process • graphical skills in presenting fashion design • characteristics of materials used for clothing and textiles • fabric construction	Students prepare a storyboard to show their designs after they have completed the following three tasks (the sequence of the tasks is not fixed). • Collection of designs based on the selected item - students / teacher find relevant designs from magazines or the Internet - students analyse designs in terms of function and aesthetics - the teacher discusses and summarises the similarities and special features of the designs with students - the teacher introduces environmental issues related to fibres and fabrics • Textile experiment - students conduct experiments by using different fabric strips to test for their appropriateness - students observe changes in each piece - students compare the results and complete reports	• students can be divided into groups to complete the tasks • students may conduct one or two tests only and share their findings with group members

Learning as a process

Teaching as enquiry

Discovery Approach

Lesson Unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
			• Designing garments / articles - students have to prepare a fashion illustration for a specific target group on the selected item - students have to identify the characteristics of fabric for the design	• students have to prepare an individual design • students consider the design, including the needs of different family members
3	2 periods • pattern construction	• basic understanding of drafting a pattern	• Students construct the pattern pieces adapted from basic blocks.	• the teacher provides basic blocks, or students construct patterns by using different methods, such as a computer-aided design system, disassembling from actual garments
	8–10 periods • garment construction	• basic sewing skills	• Realisation of design - students prepare the garment / article according to their own designs.	• individual or group work • students have to complete at least one piece of individual work within this module

Teaching as co-construction

Lesson Unit	Time allocation / Topics	Prior knowledge	Activity	Explanatory notes
4	2 periods • evaluation and presentation	• skills in oral presentation • IT skills in presenting findings Learning as co-construction	• Mini fashion show - students are asked to put on the design of their classmates - designers describe their work by referring to their storyboards - the rest of the class comment on the work presented	The presentation includes: • evaluation of the suitability of the garment / article; whether it has met the needs of the target group and addressed the selected item • explanation of the factors affecting the choice of clothing (family ties and lifestyles, and consumer behaviour in choices of clothing) • evaluation of the steps and processes (e.g. planning and organising, cooperation and coordination with others)

Appendix 3

Learning and teaching materials

Reference Books

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瑪麗恩・內斯特爾著，劉文俊，王瑩，張國春譯。2004。《食品政治：影響我們健康的食品行業》。北京：社會科學文獻出版社。

3. Fashion, Clothing and Textiles Strand

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Journal

Journal	Publisher
Choice Magazine	Consumer Council
DATA News	The Design and Technology Association
Educational Leadership	Association for Supervision and Curriculum Development

Websites

Materials in the websites of the following organisations are useful in learning and teaching the subject. Up-to-date related links to the websites can be found in the EDB website at www.edb.gov.hk.

1. Food Science and Technology Strand

Web resources	URL as at October 2015
The Association for Science Education	http://www.ase.org.uk/home.php
The Federation of Bakers	http://www.bakersfederation.org.uk/
British Nutrition Foundation	http://www.nutrition.org.uk/
The Food Allergy and Anaphylaxis Network	http://www.foodallergy.org/
Food in Schools	http://www.foodinschools.org/
Food Technology	http://www.foodtech.org.uk/
Food Safety Lessons for Middle School Students	http://extension.psu.edu/food/safety/educators/food-safety-lessons-for-middle-school-students

2. Fashion, Clothing and Textiles Strand

Web resources	URL as at October 2015
Fabricadabra	http://www.fabricadabra.co.uk/
Fashion-Era	http://www.fashion-era.com/
Hint Fashion Magazine	http://www.hintmag.com/
Melbourne School of Fashion	http://www.melbourneschooloffashion.com.au/
Mudpie	http://www.mudpie.co.uk/
The Society of Dyers and Colourists	http://www.sdc.org.uk/
Wikipedia	http://en.wikipedia.org/wiki/Fashion

Government and Non-government Organisation

Name of Organisation	URL as at October 2015
Agriculture, Fisheries and Conservation	http://www.afcd.gov.hk

Department	
Consumer Council	http://www.consumer.org.hk
Department of Health	http://www.info.gov.hk/dh/
Education Bureau	http://www.edb.gov.hk/
Faculty of Science, The Chinese University of Hong Kong	http://www.cuhk.edu.hk/sci/
Faculty of Science, The University of Hong Kong	http://www.hku.hk/science/
Food and Environmental Hygiene Department	http://www.fehd.gov.hk/
Health, Welfare and Food Bureau	http://www.hwfb.gov.hk/
Hong Kong Fashion Designers Association	http://www.hkfda.org/
Hong Kong Food Council	http://www.hkfc.org.hk/
Hong Kong Food Science and Technology Association Limited	http://www.hkfsta.com.hk/index.htm
Institute of Textiles and Clothing, Hong Kong Polytechnic University	http://www.itc.polyu.edu.hk/
Leisure and Cultural Services Department	http://www.lcsd.gov.hk/

Glossary

Term	Description
Applied Learning (ApL, formerly known as Career-oriented Studies)	Applied Learning (ApL, formerly known as Career-oriented Studies) is an essential component of the senior secondary curriculum. ApL uses broad professional and vocational fields as the learning platform, developing students' foundation skills, thinking skills, people skills, values & attitudes and career-related competencies, to prepare them for further studies and / or for work as well as for lifelong learning. ApL courses complement 24 senior secondary subjects, diversifying the senior secondary curriculum.
Assessment objectives	The outcomes of the curriculum to be assessed in the public assessments.
Co-construction	Different from the direct instruction and construction approaches to learning and teaching, the co-construction approach emphasises the class as a community of learners who contribute collectively to the creation of knowledge and the building of criteria for judging such knowledge.
Core subjects	Subjects recommended for all students to take at senior secondary level: Chinese Language, English Language, Mathematics and Liberal Studies.
Curriculum and Assessment (C&A) Guide	A guide prepared by the CDC-HKEAA Committee. It embraces curriculum aims / objectives / contents and learning outcomes, and assessment guidelines.
Elective subjects	A total of 20 subjects in the proposed new system from which students may choose according to their interests, abilities and aptitudes.
Generic skills	Generic skills are skills, abilities and attributes which are fundamental in helping students to acquire, construct and apply knowledge. They are developed through the learning and teaching that take place in different subjects or key learning areas, and are transferable to different learning situations. Nine types of generic skills are identified in the Hong Kong school curriculum, i.e. collaboration skills, communication skills, creativity, critical thinking skills, information technology skills, numeracy skills, problem solving skills, self-management skills and study skills.

Term	Description
Hong Kong Diploma of Secondary Education (HKDSE)	The qualification to be awarded to students after completing the three-year senior secondary curriculum and taking the public assessment.
Internal assessment	This refers to the assessment activities that are conducted regularly in school to assess students' performance in learning. Internal assessment is an inseparable part of the learning and teaching process, and it aims to make learning more effective. With the information that internal assessment provides, teachers will be able to understand students' progress in learning, provide them with appropriate feedback and make any adjustments to the learning objectives and teaching strategies they deem necessary.
Key Learning Area (KLA)	Organisation of the school curriculum structured around fundamental concepts of major knowledge domains. It aims at providing a broad, balanced and coherent curriculum for all students in the essential learning experiences. The Hong Kong curriculum has eight KLAs, namely, Chinese Language Education, English Language Education, Mathematics Education, Personal, Social and Humanities Education, Science Education, Technology Education, Arts Education and Physical Education.
Knowledge construction	This refers to the process of learning in which learners are involved not only in acquiring new knowledge, but also in actively relating it to their prior knowledge and experience so as to create and form their own knowledge.
Learning community	A learning community refers to a group of people who have shared values and goals, and who work closely together to generate knowledge and create new ways of learning through active participation, collaboration and reflection. Such a learning community may involve not only students and teachers, but also parents and other parties in the community.
Learning outcomes	Learning outcomes refer to what learners should be able to do by the end of a particular stage of learning. Learning outcomes are developed based on the learning targets and objectives of the curriculum for the purpose of evaluating learning effectiveness. Learning outcomes also describe the levels of performance that learners should attain after completing a particular key stage of learning and serve as a tool for promoting learning and teaching.

Term	Description
Learning targets and learning objectives	• Learning targets set out broadly the knowledge/concepts, skills, values and attitudes that students need to learn and develop. • Learning objectives define specifically what students should know, value and be able to do in each strand of the subject in accordance with the broad subject targets at each key stage of schooling. They are to be used by teachers as a source list for curriculum, lesson and activity planning.
Level descriptors	A set of written descriptions that describe what the typical candidates performing a certain level is able to do in public assessments.
Other learning experiences	For whole person development of students, 'Other Learning Experiences' (OLE) is one of the three components that complement the examination subjects and Applied Learning (formerly named as Career-oriented Studies) under the senior secondary curriculum. It includes Moral and Civic Education, Aesthetics Development, Physical Development, Community Service and Career-related Experiences.
Public assessment	The associated assessment and examination system for the Hong Kong Diploma of Secondary Education.
SBA moderation mechanism	The mechanism adopted by HKEAA to adjust SBA marks submitted by schools to iron out possible differences across schools in marking standards and without affecting the rank order determined by the school.
School-based Assessment (SBA)	Assessments administered in schools as part of the teaching and learning process, with students being assessed by their subject teachers. Marks awarded will count towards students' public assessment results.
School-based curriculum	Schools and teachers are encouraged to adapt the central curriculum to develop their school-based curriculum to help their students to achieve the subject targets and overall aims of education. Measures may include readjusting the learning targets, varying the organisation of contents, adding optional studies and adapting learning, teaching and assessment strategies. A school-based curriculum is therefore the outcome of a balance between official recommendations and the autonomy of the schools and teachers.
Standards-referenced Reporting	Candidates' performance in public assessment is reported in terms of levels of performance matched against a set of standards.

Term	Description
Student learning profile	It is to provide supplementary information on the secondary school leavers' participation and specialties during senior secondary years, in addition to their academic performance as reported in the Hong Kong Diploma of Secondary Education, including the assessment results for Applied Learning courses, thus giving a fuller picture of the student's whole person development.
Values & attitudes	Values constitute the foundation of the attitudes and beliefs that influence one's behaviour and way of life. They help form principles underlying human conduct and critical judgement, and are qualities that learners should develop. Some examples of values are rights and responsibilities, commitment, honesty and national identity. Closely associated with values are attitudes. The latter supports motivation and cognitive functioning, and affects one's way of reacting to events or situations. Since both values and attitudes significantly affect the way a student learns, they form an important part of the school curriculum.

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