

MINISTRY OF EDUCATION AND HUMAN RESOURCE DEVELOPMENT



General Education and Skills Pathway Programme of Study

TECHNOLOGY AND ENTERPRISE

AGRICULTURE AND FISHERIES

Secondary Four and Five 2020

Acknowledgements

The Technology and Enterprise Programme of Study within the General Education and Skills Pathway was developed by the Technology and Enterprise Heads of Department (HOD) and teachers from state Secondary Schools. They received support from the Secondary Curriculum and Teacher Support Team at the Ministry of Education and Human Resource Development.

Rationale

The General Education and Skill Development Pathway of the national curriculum framework (2019) caters to students at key stage 5 (S4-S5) over two years. Designed with a competency-based approach, by the end of this programme, students can enrol as first-year students in their chosen institution. Alternatively, they will possess the necessary skills and knowledge to commence work as an apprentice.

For the entirety of the first term, students will attend classes at their respective schools. They will be imparted with foundational knowledge in areas like career guidance and modules focused on the Agriculture and Fisheries context. This will equip them with the skills and knowledge required for a Work-Based Experience Programme. Starting from the second term, students will be placed in industries or jobs aligned with their preferences. In key stage 4 (S4), they will attend school for three days and participate in the Work-Based Experience (WBE) for two days every week. This pattern shifts in key stage 5 (S5), with two school days and three WBE days each week. The WBE is pivotal, allowing students to apply their classroom-learned skills in real-world settings.

Students will gain fundamental practical skills and insights into the Agriculture and Fisheries contexts. ICT should be integrated into the instruction process, enabling students to familiarize themselves with context-related software and stay abreast of modern technological developments, ensuring lifelong learning. Furthermore, entrepreneurial knowledge should be woven into the Agriculture and Fisheries instruction, helping students grasp the nuances of initiating a business and understanding their roles within this sector.

Upon completing the five modules, students should be prepared to work alongside seasoned professionals in the Agriculture and Fisheries domain as apprentices. The pace of the programme is flexible and adaptable to the individual learning capacities of students.

1.0 General Information

1.1 Operational Definitions of Terms in the Programme of Study

- Background, Purpose, and Implementation Process of the Programme of Study
- Aim of the Programme of Study
- Approved subjects of the Programme of Study
- Entry Requirements and Progression
- Modality of Offering the Programme of Study at the Level of Respective Schools
- Leadership, Coordination, Support, and Monitoring of the Programme of Study at both the Ministry Headquarters and Respective Schools
- Organization for Teaching and Learning for the Programme of Study at School Level
- Assessment, Certification Strategy, Modality, and Monitoring for the Programme of Study
- Relevant Reference Documents – encompassing Laws, Regulations, Circulars, Policies, and Guidelines.

2.0 Key Stage 5: Year 4 Study Programme (2020)

2.1 Subject Focus: Agriculture

2.2 Weekly School Contact: 160 minutes | Annual Total: 104 hours (6240 minutes)

1.1 Weeks for Teaching and Learning: 12

1.2 Weekly Periods for the Subject: 4

Domains For Study: **Introduction To Agriculture & Farming**

TERM: **1**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> Basic principles of agriculture and farming Importance of Agriculture to the family and the national economy Major careers in the field of Agriculture and their requirements in terms of competencies and qualifications Historical aspects of 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> Identify the basic principles of agriculture and farming <ol style="list-style-type: none"> Crop husbandry Animal husbandry Plant Protection Farm engineering State the importance of Agriculture to the family and the national economy <ol style="list-style-type: none"> Production of food Shelter 	<ul style="list-style-type: none"> Oral questions Written assessment Research assignments <ol style="list-style-type: none"> Local production of food Careers in the agricultural field Homework 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> Posters related to Agriculture and farming The evolution of Agriculture and farming-related short documentary videos. Simulation <p>1. Notes on Agriculture and Farming extracted from genuine sources relevant to the Agriculture and Fisheries field Compiled by the teacher as a module.</p>

<p>agriculture and farming</p>	<p>c. Money d. Employment e. Materials for industries</p> <ul style="list-style-type: none"> ● List the major careers in the field of Agriculture ● State their requirements in terms of competencies and qualifications ● Summarize basic historical aspects of agriculture and farming. 		<ul style="list-style-type: none"> ● Books ● Internet <p>2. Resource person (a successful farmer/M.O.I prospect for farmers etc...)</p>
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Domains For Study: **Soil And Water**

TERM: 2

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Types and characteristics of soil ● Soil composition and texture ● Importance of soil fertility in crop production ● Soil erosion and conservation ● Collection and storing water for Crop Production and gardening ● Major techniques of Irrigation. 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Differentiate the types and characteristics of soil ● Sandy, clay, and loam soil ● Demonstrate the importance of soil fertility in crop production ● Explain soil erosion and conservation ● List the major types of soil erosion and conservation measures ● Illustrate different ways of Collecting and storing water for Crop Production and gardening <p><u>SKILLS</u></p> <ul style="list-style-type: none"> ● Ability to make a soil profile. ● Demonstrate how to prevent 	<ul style="list-style-type: none"> ● Practical test on making a soil profile. ● Oral questioning ● Presentation of individual and group activity. 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> ● Posters related to soil and water. ● Agriculture-related short documentary videos. (Soil, water, erosion, water collection, storage, and irrigation). ● I am measuring software for experiments (soil analysis simulation) e.g. Spreadsheets in Excel. <p>1. Notes on soil and water extracted from genuine sources relevant to the Agriculture and fisheries field and extracted, Simplified and Compiled by the teacher as a module.</p> <p>Sources:</p> <ul style="list-style-type: none"> ● Books ● Internet

	<p>soil erosion</p> <ul style="list-style-type: none"> ● Ability to collect and analyze data using analysis software e.g. Ms Excel. <p><u>ATTITUDE</u></p> <ul style="list-style-type: none"> ● Work confidently and responsibly with equipment and resources ● Be happy to carry out tasks that are within their capacity ● Appreciate, respect and value the different physical and human environments and reflect positively upon their place in them. 		<p>2. Resource person (research centre etc...)</p> <p><u>Experiments</u></p> <p>The use of:</p> <ul style="list-style-type: none"> ● Sprinkler ● Testing kit ● Drip irrigation systems (miniature) <p>3. Visits</p> <p>4. Networking</p>
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Domains For Study: **Crop Production**

TERM: **3**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Basic principles of crop production <ul style="list-style-type: none"> a. Soil and land preparation b. Nursery practices c. Planting d. Cultural practices ● Common types of crops grown in Seychelles ● Common tools and equipment used in farming ● Methods and ways of propagating plants ● The functions of plant parts/organs ● Crop protection <ul style="list-style-type: none"> a. Plant diseases, deficiency, pest control 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Describe crop production ● Identify different types of crops grown in Seychelles ● List the different cultural practices ● Demonstrate nursery practices ● Practice Soil and land preparation ● State the functions of tools and equipment ● Identify the different methods of propagating plants ● Identify the functions of plant parts/organs ● List the plant diseases, deficiency, pest control 	<ul style="list-style-type: none"> ● Research work on crops ground locally. ● Assessment of practical work using a checklist. ● Written assessment. ● Worksheets 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> ● Posters related to crop production. (Tools, safety, pest control, plant anatomy, maintenance, principles of plant growth etc...) ● Agriculture-related Short documentary videos. (Crop production) ● Video clips of computer-controlled greenhouses and their operations. <p>1. Notes on crop production extracted from genuine sources relevant to the Agriculture and fisheries field and extracted, Simplified and Compiled by the teacher as a module.</p> <ul style="list-style-type: none"> ● Books ● Internet

	<p><u>SKILLS</u></p> <ul style="list-style-type: none">• Carry out different nursery practices• Practice different planting techniques• Perform some cultural practices		<p>2. Resource person (research centre/ Crop production farmer etc...) Crop production farmer.</p>
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3.0 Key Stage 5: Year 5 Study Programme (2020)

3.1 Subject Focus: Agriculture

3.2 Weekly School Contact: 160 minutes | Annual Total: 104 hours (6240 minutes)

1.1 Weeks for Teaching and Learning: 12

1.2 Weekly Periods for the Subject: 4

Domains For Study: **Climate And The Environment**

TERM: **1**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> Environmental factors influencing Agricultural production Rainfall Evaporation Wind Humidity Temperature Environmental influences on 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> List the different environmental factors influencing Agricultural production State the environmental factors that influence livestock production <p><u>ATTITUDE</u></p> <ul style="list-style-type: none"> Be willing to explore new patterns of interaction and be prepared to utilize and value their capacities for 	<ul style="list-style-type: none"> Research work on environmental factors affecting agricultural production. 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> Posters related to climate and the environment. (Tools, safety, instruments etc...) Sat Nav maps, weather forecast videos Agriculture-related Short documentary videos on climate and the environment. (awareness of climate change) <p>1. Notes on climate and the environment extracted from</p>

<p>livestock production.</p>	<p>creative and critical thinking</p>		<p>genuine sources relevant to the Agriculture and fisheries field and extracted, Simplified and Compiled by the teacher as a module.</p> <ul style="list-style-type: none"> ● Books ● Internet <p>2. Resource person (Farmer, meteorologist etc...)</p> <p>3. Site visits to meteorological sites, to analyze how satellites are used for weather forecasts.</p>
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Domain For Study: **Livestock Production**

TERM: **2**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Livestock and livestock production ● Animal breeds found locally ● Major tools used in livestock production ● Food nutrition for livestock production. ● Importance of good housing in livestock production ● Importance of livestock health of farming animals <ul style="list-style-type: none"> a. Types of diseases. b. Control measures 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Explain livestock and livestock production ● Identify the different animal breeds found locally ● Identify major tools used in livestock production ● List the different livestock feeds ● Explain the importance of good housing in livestock production. ● State the importance of caring for farming animals. ● List some of the major types of diseases. ● State control measures needed 	<ul style="list-style-type: none"> ● Oral questions ● Assignment on livestock. 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> ● Posters related to Livestock production ● Agriculture-related Short documentary videos evolution of livestock production. <p>1. Notes on livestock production extracted from genuine sources relevant to Agriculture and fisheries field and extracted, Simplified and Compiled by the teachers as a module.</p> <ul style="list-style-type: none"> ● Books ● Internet <p>2. Resource person (livestock production farmer, Hatchery technician etc....)</p> <ul style="list-style-type: none"> ● Use of theology ● Artificial insemination-preserving semen,

			<p>cross-breeding, disease resistant Livestock,</p> <ul style="list-style-type: none">● Tagging of livestock, using RFID technology.● Recordkeeping software● Data logging software.
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Domains For Study: **Agriculture & Business**

TERM: **3**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Basic principles of Agri-business <ul style="list-style-type: none"> a. Supply and demand ● Importance of record keeping and decision making in Agri-business 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Describe the basic principles of Agri-business in terms of supply and demand ● State the importance of record-keeping and decision-making in Agri-business <p><u>SKILLS</u></p> <ul style="list-style-type: none"> ● Classify tools and equipment used in livestock production ● Put into practice the feeding processes of livestock. ● Designing a plan for the livestock housing system <p><u>ATTITUDES</u></p> <ul style="list-style-type: none"> ● Caring for sick animals ● Working collaboratively ● Display positive attitudes to 	<ul style="list-style-type: none"> ● Questions on agribusiness. ● Assignment on record keeping. 	<p><u>Visual Aids</u></p> <p>Posters related to Agriculture and business.</p> <ol style="list-style-type: none"> 1. Notes on Agriculture and business extracted from genuine sources relevant to the Agriculture and fisheries field and extracted, Simplified and Compiled by the teacher as a module. <ul style="list-style-type: none"> ● Books ● Internet 2. Resource person (Successful farmer in the small entrepreneurial sector.) Recordkeeping software like Spreadsheets, Databases.

	<p>agriculture</p> <ul style="list-style-type: none">• Use the ideas and methods of agricultural science in everyday life		
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4.0 Key Stage 5: Year 4 Study Programme (2020)

4.1 Subject Focus: Fisheries

4.2 Weekly School Contact: 160 minutes | Annual Total: 104 hours (6240 minutes)

1.1 Weeks for Teaching and Learning: 12

1.2 Weekly Periods for the Subject: 4

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
TERM: 1			
Domain For Study: Fisheries			
<u>KNOWLEDGE</u> <ul style="list-style-type: none"> Basic Principles of Fishing Importance of the Fishing industry Economic Exclusive Zone (EEZ) 	<u>KNOWLEDGE</u> <ul style="list-style-type: none"> State the basic principles of fisheries State the importance of fishing industry Basic understanding of Economic Exclusive Zone (EEZ) 	<ul style="list-style-type: none"> Questions on the importance of the fishing industry 	<u>Visual Aids</u> Posters related to Fisheries, Samples. 1. Notes on fisheries extracted from genuine sources relevant to the Agriculture and fisheries field. Extracted, Simplified and Compiled by the teacher as a module.
Domain For Study: Marine Resources			<ul style="list-style-type: none"> Books Internet
<u>KNOWLEDGE</u>	<u>KNOWLEDGE</u>	<ul style="list-style-type: none"> Assignment on different 	

<ul style="list-style-type: none"> • The different types of marine resources. • Classification of the major marine resources. • Importance of marine environment. 	<ul style="list-style-type: none"> • List the different types of marine resources • Classifying major marine resources • Explain the importance of marine environment <ul style="list-style-type: none"> a. Pollution b. Conservation 	<p>types of marine resources.</p> <ul style="list-style-type: none"> • Project work on marine resources <ul style="list-style-type: none"> a. Pollution b. Conservation 	<p>2. Resource person (Talk/presentation on blue economy/ legislation).</p> <p>3. Technology Tagging technology- RFID, Satellite maps, surveillance drones (EEZ).</p> <p>Use technology to monitor marine pollution- use surveillance systems to monitor the culprits.</p>
<p>Domain For Study: Fish Legislation</p>			
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> • Fishing laws and regulations. • Major roles of local fishing organizations. 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> • State fishing laws and regulations. • State the major roles of local fishing organizations. 	<ul style="list-style-type: none"> • Questions on fishing laws and regulations. 	
<p>TERM: 2</p>			
<p>Domain For Study: Fish Science</p>			
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> • Anatomy and Physiology of the fish. 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> • Identify major fish organs. 	<ul style="list-style-type: none"> • Oral questioning observation by using a checklist. • Project work on health and safety 	<p><u>Visual Aids</u></p> <p>Posters related to Fish science/safety/first aid and rescue.</p>

Domain For Study: Health & Safety			
<u>KNOWLEDGE</u>	<u>KNOWLEDGE</u>		
<ul style="list-style-type: none"> • The importance of Personal safety measures. • Importance of First Aid, Fire Safety and Rescue drills. • Perform Personal safety measures. • First Aid and basic fire safety. 	<ul style="list-style-type: none"> • State the function of these organs. • State the importance of Personal safety measures. • Perform basic First Aid practices. • State Fire Safety and Rescue drills. 		<p>1. Notes on fish science extracted from genuine sources relevant to the Agriculture and fisheries field. Extracted, Simplified and Compiled by the teacher as a module.</p> <ul style="list-style-type: none"> • Books • Internet <p>2. Resource person (fire drill, first aid expert etc.....)</p> <p>3. Health and safety video simulations.</p>
TERM: 3			
Domain For Study: Fish Handling			
<u>KNOWLEDGE</u>	<u>KNOWLEDGE</u>		
<ul style="list-style-type: none"> • Fish Handling techniques on-board boats and on land. • Fish processing and preservation methods. • Techniques of marketing and packaging of fish. 	<ul style="list-style-type: none"> • List the handling techniques on-board boats and on land. • State the fish processing and preservation methods. • Describe the techniques of marketing and packaging of fish. <p><u>SKILLS</u></p> <ul style="list-style-type: none"> • Carry out different fish 	<ul style="list-style-type: none"> • Assignment on fish processing and preservation methods. 	<p><u>Visual Aids</u></p> <p>Posters related to Fish handling/processing/preserving/packaging and marketing.</p> <p>1. Notes on Fish Handling extracted from genuine sources relevant to the Agriculture and fisheries field. Extracted, Simplified and Compiled by the teacher as a module.</p> <ul style="list-style-type: none"> • Books

	<p>processing and preservation practices.</p> <ul style="list-style-type: none"> ● Practice different boat handling techniques. <p><u>ATTITUDE</u></p> <ul style="list-style-type: none"> ● Work confidently and responsibly with equipment and resources ● Be happy to carry out tasks that are within their capacity ● Appreciate, respect and value the different physical and human environments and reflect positively upon their place in them. 		<ul style="list-style-type: none"> ● Internet <p>2. Resource person (Fish Processing technician.) Site Visit to IOT, to see how fish is Handled from sea to packaging.</p>
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5.0 Key Stage 5: Year 5 Study Programme (2020)

5.1 Subject Focus: Fisheries

5.2 Weekly School Contact: 160 minutes | Annual Total: 104 hours (6240 minutes)

1.1 Weeks for Teaching and Learning: 12

1.2 Weekly Periods for the Subject: 4

Domains For Study: **Fishing Technology**

TERM: **1**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> Fishing gears and equipment used in artisanal and semi-industrial fishing. Types of fishing boats found in Seychelles. Major parts and functions of an outboard engine. Major difference between an in-board and out-board engines. Maintenance of fishing gears 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> List the different fishing gears and equipment used in artisanal and semi-industrial fishing. State the different types of fishing boats found in Seychelles. State the major part of an outboard engine. State the difference between in-board and out-board 	<ul style="list-style-type: none"> Questions to list different fishing equipment. Project on the different types of fishing boats in Seychelles. Assess students making and repairing fishing nets/traps using a checklist. Questions on artisanal, semi-industrial and industrial fishing. 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> Posters related to Fishing technology. Short documentary videos of the evolution of fishing technology. Fish locators <p>1. Notes on fishing technology extracted from genuine sources relevant to the Agriculture and fisheries field. Extracted, Simplified and Compiled by the teacher as a module.</p>

<p>and engines.</p> <ul style="list-style-type: none"> ● Construction of a fishing trap. ● Types of fishing knots/nets. ● Importance of Artisanal, Semi-Industrial and Industrial fishing. ● Major types of fishing vessels. 	<p>engines.</p> <ul style="list-style-type: none"> ● Assist in repairing fishing gears and engines. ● Practice making a fishing trap. ● State and practice different types of fishing knots/nets. ● State the importance and difference between Artisanal, Semi-Industrial and Industrial fishing. ● List the major types of fishing vessels. <p><u>SKILLS</u></p> <ul style="list-style-type: none"> ● Ability to make and repair fish nets and traps. ● Ability to tie different fishing knots. 		<ul style="list-style-type: none"> ● Books ● Internet <p>2. Resource person Use of technology Use of fish finder software onboard fishing vessels</p>
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Domains For Study: **Introduction To Navigation**

TERM: **2**

Essential Knowledge, Skills, and Attitudes Expected for Teachers to Teach	Expected Knowledge, Skills, and Attitudes for Student Acquisition (Attainment Targets)	Assessment	Essential School-Based Resources for Study (Textbooks, Workbooks, Equipment, etc.)
<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● Importance of navigation. ● Major navigational equipment. 	<p><u>KNOWLEDGE</u></p> <ul style="list-style-type: none"> ● State the importance of navigation. ● List the major navigational equipment. <p><u>SKILLS</u></p> <ul style="list-style-type: none"> ● Ability to navigate an outboard motorboat. ● Ability to use some of the navigational equipment. <p><u>ATTITUDE</u></p> <ul style="list-style-type: none"> ● Aware of the limitations of fisheries science knowledge, methods, equipment and tools. ● Demonstrate curiosity, patience and persistence. 	<ul style="list-style-type: none"> ● Questions to list the major navigational equipment. 	<p><u>Visual Aids</u></p> <ul style="list-style-type: none"> ● Posters related to Navigation. <p>1. Notes on Navigation extracted from genuine sources relevant to the Agriculture and fisheries field. Extracted, Simplified and Compiled by the teacher as a module.</p> <ul style="list-style-type: none"> ● Books ● Internet <p>2. Resource person (Skipper) Technology Satellite navigation systems, GPS technology.</p>