

Future of Work • Future of Learning

3 - 4 November 2016



Let's go!

TRAINING AND ADULT EDUCATION SECTOR TRANSFORMATION PLAN (TAESTP)

An initiative of

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institute for
adult
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singapore

Future Workforce for the Logistics Sector through Earn and Learn

Republic Polytechnic

Dr Wang Jianguo and Soh Lai Seng
School of Engineering

Future Workforce for the Logistics Sector through Earn and Learn



Company Profile

Republic Polytechnic School of Engineering (RP SEG)

Founded

2003

Background

RP SEG is a leading institution for logistics education and training. It focuses on developing industry-related diploma curricula and niche capabilities in specialised logistics areas.

Geared for Change

Industry-relevant curricula and state-of-the-art facilities have been integral to RP SEG's success.

We look at the school's strategic moves and milestones through the years.

RP SEG (Republic Polytechnic School of Engineering) was established in 2003 with the vision of becoming a leading institution for engineering education. Logistics education based on industrial engineering principles was identified as a unique offering of RP SEG. As the logistics sector is poised to grow from a labour-intensive to a high-tech one, RP SEG saw the need to work closely with industry players to keep its curricula and infrastructure current.

Impetus for Change

Aware that the logistics sector is a fast-changing pillar of Singapore's economy, RP SEG saw the need to align with industry practices and prepare students to be job ready.

Solutions

Over the years, RP SEG included relevant internships in its curriculum, set up a realistic training centre for hands-on learning, and pioneered relevant, innovative programmes in logistics.

Contents

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- Journey for Change
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- Enhanced Internship Programme
- Earn and Learn Programme
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- Moving Forward



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TAESTP

Recommendations Applied:

 **Recommendation 2**
Support business competitiveness

 **Recommendation 5**
Strengthen learning infrastructure and systems to support innovation

Geared for Change

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Through the years, the school has remodelled its curricula, transitioning from a theory-based framework to one that combines classroom and workplace learning. This transition serves to provide updated training, relevant internships, and smoother entry into jobs for students.

MAJOR MILESTONES

As the youngest polytechnic in Singapore, RP SEG faced challenges in gaining industry interest and convincing them to form partnerships. Further, many companies had no prior experience collaborating on student internships or projects.

Nevertheless, RP SEG was very active in engaging the industry, especially through the various logistics associations. The timeline on the next page shows what it has achieved.



Background



Let's go!

**TRAINING AND
ADULT EDUCATION**

SECTOR TRANSFORMATION PLAN

(TAESTP)

Republic Polytechnic

- Established in 2002
- 7 schools & 3 centres
- 42 diplomas and 1 Common Engineering Programme
- 14,000 students
- 1,099 staff
 - academic staff make up **65%** of RP's staff strength



RP's Vision & Mission

Vision

An educational institution of choice for nurturing innovative, entrepreneurial and cultured professionals.

Mission

We nurture individuals to prepare them for a dynamic world in partnership with stakeholders, leveraging on **problem-based learning**.



RP Facilities



Learning Hub

More than 500 facilitation rooms

More than 170 laboratories

Library with a seating capacity for 2100



RP Facilities



Sports Complex

An Olympic-sized swimming pool, soccer/rugby field, basketball courts, multi-purpose courts, tennis courts, fitness centre, aerobics hall, badminton hall and Adventure Learning Centre.

Cultural Centre

1,000-seat Theatre, **300**-seat Studio, **120**-seat Lab



7 Schools and 3 Centres

- School of Applied Science
- School of Engineering
- School of Hospitality
- School of Info-comm
- School of Sports, Health and Leisure
- School of Technology for the Arts
- School of Management and Communication

- Centre for Educational Development
- Academy for Continuing Education @RP
- Centre of Innovation for Supply Chain Management



Diploma Programmes

School of Engineering

- Diploma in Aerospace Avionics
- Diploma in Aerospace Engineering
- Diploma in Aviation Management
- Diploma in Electrical and Electronic Engineering
- Diploma in Industrial and Operations Management
- Diploma in Green Building Energy Management
- Diploma in Supply Chain Management
- Diploma in Engineering Systems & Management
- Diploma in Engineering Design with Business **New!**
- Common Engineering Programme

School of Applied Science

- Diploma in Biomedical Sciences
- Diploma in Biotechnology
- Diploma in Environmental Science
- Diploma in Marine Science and Aquaculture
- Diploma in Materials Science
- Diploma in Pharmaceutical Sciences

School of Hospitality

- Diploma in Customer Experience Management with Business
- Diploma in Hotel and Hospitality Management
- Diploma in Integrated Events Management
- Diploma in Restaurant and Culinary Operations
- Diploma in Wellness, Lifestyle and Spa Management

School of Technology for the Arts

- Diploma in Arts and Theatre Management
- Diploma in Design for User Experience
- Diploma in Game Design
- Diploma in Media Production and Design
- Diploma in Sonic Arts

School of Management and Communication

- Diploma in Consumer Behaviour and Research
- Diploma in Human Resource Management with Psychology
- Diploma in Mass Communication
- Diploma in Social Enterprise Management

School of Infocomm

- Diploma in Business Applications
- Diploma in Business Information Systems
- Diploma in Information Technology
- Diploma in Interactive and Digital Media
- Diploma in IT Service Management
- Diploma in Mobile Software Development
- Diploma in Infocomm Security Management

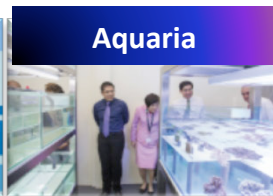
School of Sports, Health & Leisure

- Diploma in Health Management and Promotion
- Diploma in Health Services Administration
- Diploma in Outdoor and Adventure Learning
- Diploma in Sports and Exercise Sciences
- Diploma in Sports and Leisure Management
- Diploma in Sports Coaching

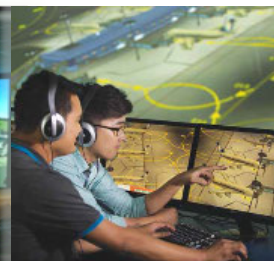
State-of-the-Art Training Laboratories



The ARCH



Studio



Virtual Aerodrome Laboratory



Hotel and Kitchen Training Facilities

RP's Educational Philosophy

We are committed to nurture the RP graduate to be:

- **Innovative professionals**
- **Integrative problem-solvers**
- **Passionate global citizens with good character**

Students are acculturated to be part of a professional body –

Industry Ready, Innovation Ready, International Ready.



Adopting Problem-based learning



- Established in 2002, RP was the first institution in Singapore to leverage Problem-based learning for all its diploma programmes.
 - Student-centric pedagogical strategy to help graduates assimilate self-directed, collaborative and deep learning
 - Based on theory of social constructivism.
 - Assessment is on the basis of corroborated evidence – continuous, formative and summative.

School of Engineering (RP SEG)

- Diploma in Aerospace Avionics
- Diploma in Aerospace Engineering
- Diploma in Aviation Management
- Diploma in Engineering Design with Business
- Diploma in Engineering Systems and Management
- Diploma in Electrical and Electronic Engineering
- Diploma in Industrial and Operations Management
- Diploma in Green Building and Energy Management
- **Diploma in Supply Chain Management**
- Common Engineering Programme



Impetus for Change

Singapore Logistics Industry

World's Leading Logistics Hub

20 out of world's top 25 players have presence in Singapore

Key Contributor to Singapore's Economy

Economy	LPI	
	Rank	Mean score
Germany	1	4.10
Singapore	2	4.06
Netherlands	3	4.05
Belgium	4	4.00
United Kingdom	5	3.97
Sweden	6	3.95
Japan	7	3.93
Hong Kong SAR, China	8	3.92
United States	9	3.91
Luxembourg	10	3.89

World Bank Logistics Performance Index ranking across 4 editions (updated as of 2014)



- In 2014, the transportation and storage industry contributed S\$23.5bil (~7% of GDP) and 188,900 employment (~9% of total)*
- Logistics industry comprising Freight Forwarding, Contract Logistics and Goods/Delivery Transportation is a key contributor to the Transport & Storage industry

*Source: Ministry of Trade & Industry (2014)



Singapore Logistics Industry Vision

Innovation

Industry Innovation



Innovation Eco-system



SC Control Tower



Connectivity

Air



Sea



Trade



Productivity

BIC Facilities



Resource Pooling



Automation & Tech Adoption



Specialisation



SkillsFuture

Future-ready Workforce



Talent Attraction



Talent Retention



RP SEG's Positioning in Logistics Sector

- Launch a Diploma in Supply Chain Management (DSCM) in 2006
- Transition curriculum from a more academic-based learning to one that involves both classroom and workplace learning
- Expose students to the workplace through living labs on campus, on-site learning, industry final year projects and internships,
- Work with SMEs in providing research, consultancy and training through technology-enabled learning to help them retain business competitiveness.

Future Workforce for the Logistics Sector through Earn and Learn



Journey for Change

- 2006**
Founded the Integrated Supply Chain Lab (ISAIL)
 - Simulated a real distribution centre for training
 - Anchor facility for industry to test and optimise supply chain operations
- 2012**
Established the Centre of Innovation for Supply Chain Management (COI-SCM) in partnership with EDB and SPRING Singapore
 - Championed supply chain excellence for Singapore-based companies
 - Provided industry-relevant knowledge through continuous training
 - As of today, COI-SCM has completed more than 200 projects and partnered more than 400 companies
- 2014**
Appointed by MOE as sector coordinator of Logistics & Supply Chain Management for Post-Secondary Education Institutions (PSEIs)
 - As of today, RP SEG has led the rollout of the SkillsFuture Earn and Learn Programme (ELP) and Enhanced Internship (EI) for the industry
- 2015**
Launched the Supply Chain Innovation Lab, the next version of ISAIL
 - Provided realistic distribution centre environment for hands-on learning
 - Industry partners can gain access to new expertise, technology, and solutions
 - A focal point for SEG and COI-SCM
- 2015**
Appointed by WDA to be the Programme Manager for logistics ELP
 - RP's logistics ELP had 39 participants hired by 15 companies
- 2016**
Developed the first-ever poly-ELP-degree pathway
 - Finalised a partnership with UniSIM offering RP's ELP Specialist Diploma graduates a place in UniSIM's Logistics and Supply Chain Management degree programme

Let's go!

**TRAINING AND
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SECTOR TRANSFORMATION PLAN**
(TAESTP)

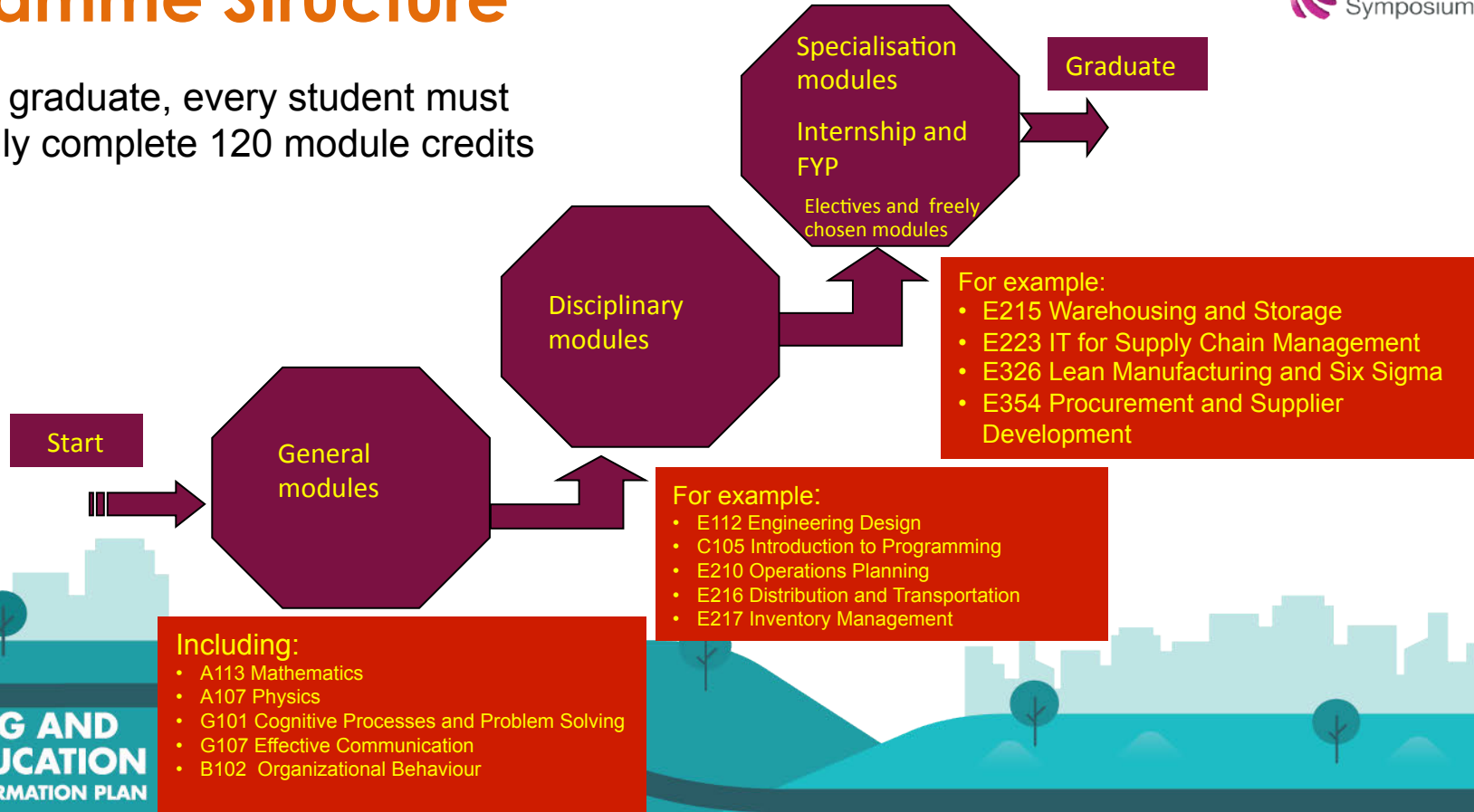
2006 Launch of DSCM and iSAIL

- Launch **Diploma in Supply Chain Management** (DSCM).
- Open the integrated Supply Chain Lab (iSAIL)
 - Simulate a distribution centre for training
 - Anchor facility for industry to test optimize supply chain operations



Diploma in Supply Chain Management Programme Structure

In order to graduate, every student must successfully complete 120 module credits



Conducting Classes at Industry Sites

- DSCM classes are conducted at companies wherever possible, allowing students to go through the experience of solving real industrial problems

E356 - Pharmaceutical and Bio-Chem Supply Chain

- DHL healthcare storage facility to experience a real operation
- Zuellig Pharma Healthcare Local and Regional Distribution Centre to look at the Best Industrial Practices (cGMP/ GDP)

E352 – Retail Logistics

- DHL's Fashion Hub to look at the logistics support for luxury fashion goods.



Professional Certifications



- DSCM partners with the industry to award professional certifications to students, upon completion of their modules in RP and meeting the requirements from the certification bodies, to help DSCM graduates have a smoother transition to work.

Cold Chain Certification

- Cold Chain Officer Certification, jointly awarded by GS1, AVA & RP

CILT Certification

- CILT Singapore to award certification leading to CPL in the future

Transported Asset Protection Association (TAPA) Asia

- Fundamentals in Freight Security Requirements (FSR) Management

SAP ERP Certification

- Endorsed by the SAP University Alliances Programme



Singapore

The Chartered Institute
of Logistics & Transport



Industry Final Year Project



Supporting SMEs of various industries through process modeling, feasibility studies, system recommendations etc in the area of supply chain management

1. Hulee Impex
2. I.M. Roadways
3. Singlun
4. Wah and Hua
5. Outbound and Marine
6. B&G Distribution
7. Yang Kee Logistics
8. SC Auto Industries
9. Supersteam Asia Pacific
10. MAGI Events
11. Fairbanks
12. Air Market Express
13. SpeedMark
14. Poh Tiong Choon
15. XMH Holdings
16. Newlift
17. Sinwa
18. AW Transport
19. Storbest-SSHK Cold Logistics



XMH HOLDINGS LTD.

Industry Immersion Programme (IIP)

- 20 weeks internship programme
- Achieved 100% internship in 2013, further enhanced with SkillsFuture initiative
- Local or overseas
- Works with industry partners to have Internship as part of the Company's talent acquisition plan



2012 COI-SCM

- Setup of the Centre of Innovation for Supply Chain Management (COI-SCM)
 - A national centre funded by SPRING Singapore and EDB to support the growth of companies in the logistics sector.

Innovation centre to lift productivity



By RADHAIK DOON

PERSONAL care products distributor Coslino is set to use a robot to help it produce 600,000 units of its new toothpaste in a newly opened centre.

The boss owner of Double White care products hopes to cut the stock it keeps on hand with the help of the Centre of Innovation for Supply Chain Management (COI-SCM).

“Real change must take place with it technology.” In the way world is changing, in the way business are done, in the way people are working.

She said that “having a productivity oriented vision for a good ‘go-ahead’ is what makes an integral part of business success, and a vital part of the business DNA in Singapore.”

The centre, which boasts over 200



Members of the COI-SCM official opening putting a load of boxes of printing materials on display (left), and instructing the lab to use machines such as the “flexible robots arm” (above), which can be configured to do tasks such as packing them into cartons. SP PHOTO: ERNEST TEO

助中小企业加强物流运作 供应链管理创新中心正式成立

孙伟伦 报道
scoerw@spri.com.sg

为更准确地预测市场需求，妥善管理存货周转，改善高产量分类效率的中小企业，现在可以获得政府在这方面所提供的咨询服务。

由新加坡、经济发展局和共和理工学院联合设立，耗资780万元的供应链管理创新中心（Centre of Innovation for Supply Chain Management）昨天正式成立。

中心坐落在共和理工学院，它将协助本地中小企业改善供应链管理，从中加强它们在物流方面的运作，提高生产力。中心理事长是在物流和供应链管理已有20年经验的郭炳祺（51岁）。

昨天开幕的供应链管理创新中心是政府开设的六个创新中心的首个之一。其他创新中心都设在国立大学或科研机构内，负责为六个工业的中小企业提供科技



对政群策文通部政务新长杨炳明（左三）昨天向供应链管理创新中心了解如何为中小企业提供咨询服务，并参与它们改善工作流程的展览。（新加坡报）

“The COI-SCM will serve as the platform and one-stop centre to assist companies in appreciating efficiency gains through process innovation, use of technology and automation, process re-design and re-engineering.”

Minister of State, Mr Lee Yi Shyan, Parliament, 2 Mar 2012:

2014 Sector Coordinator – Logistics Sector



- Ministry of Education appointed RP among the post-secondary education institutions (PSEIs) as the sector coordinator of the Logistics & Supply Chain Management sector on 17th December 2014, to
 - drive industry engagement and coordinating the implementation of SkillsFuture initiatives.
 - led the effort in the roll-out of the SkillsFuture Earn and Learn Programme (ELP) and Enhanced Internship (EI) for the logistics industry.

2015 Launch of Supply Chain Innovation Lab

- Jointly owned by RP SEG and COI-SCM
- The 1,000 sq m Supply Chain Innovation Lab simulates a distribution centre. It aims to help small and medium-sized enterprises (SMEs) develop and try out new solutions in a bid to raise productivity in the industry.
- Logistics students will also have hands-on training in managing warehouse operations with innovations such as a driverless forklift, an automatic picking system and a robotic arm.



Achievements



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SECTOR TRANSFORMATION PLAN

(TAESTP)

Student Competitions



2013: SCC Champion and 2nd Runner-Up



2014: SCC Champion



2015: SCC Champion and 1 Runner-Up



SiPi Productivity Challenge 2014 Champion



Enhanced Internship Programme



Let's go!

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SECTOR TRANSFORMATION PLAN
(TAESTP)

Demand on Logistics Manpower & Skills

Source: HayGroup

Main Operations

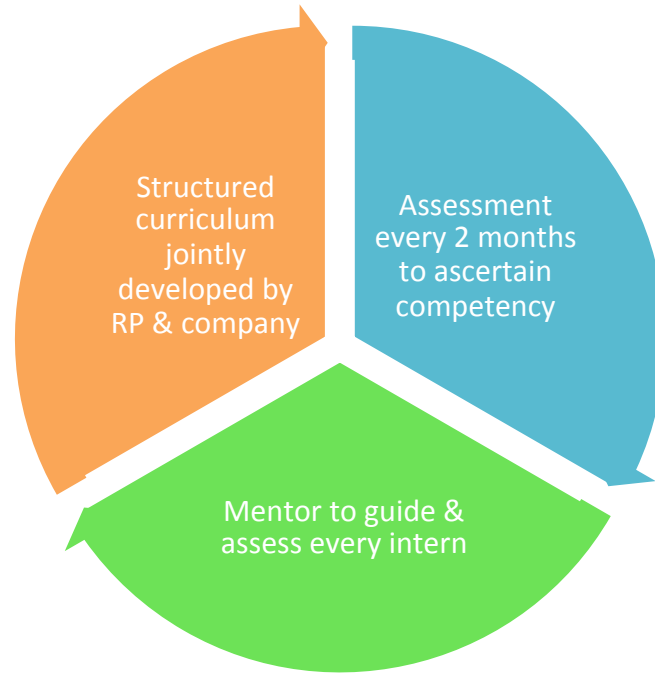
- Warehouse Operations & Management
- Transport Operations & Management
- Freight Forwarding Operations and Management
- Sales & Customer Service

Niche and Emerging

- Logistics Information System
- Innovation and Process Improvements
- Vertical Specialists
- Logistics Solutions
- Programme Management

SkillsFuture Enhanced Internship (EI) Programme for Logistics

Key Features



OJT (Curriculum) Example

Logistics Operations

- Managing Inbound/Outbound Operations

Main Task	Knowledge	Skills	Pass		Fail	Comments
			Competent	Need Improvement	Not Yet Competent	
Managing Inbound Operations						
1.1 Supervise handling of the un-stuffing plan	<ul style="list-style-type: none"> Unstuffing Operations Process Inbound processes : receiving and putaway 	<ul style="list-style-type: none"> Ability to use WMS Interpretation and use of unstuffing plan 	<div style="border: 2px solid #4a86e8; border-radius: 20px; padding: 20px; text-align: center; color: white;"> Assessment at the end of each operation and final report </div>			
1.2 Verify incoming cargo requirements	<ul style="list-style-type: none"> Product knowledge of all product types managed by the company 	<ul style="list-style-type: none"> Ability to check the type of products and select the type of storage systems Have the basic skills in segregation of products based on storage requirements 				

Mentor

- Each intern will be assigned 1 company mentor
 - 1 mentor should not have more than 3 mentees
- Mentors should be supervisors or managers of interns
- Role is to guide, train and assess mentees as well as provide career advice

EI Launch

RP launched the SkillsFuture Enhanced Internship Programme for Logistics with 48 students & 8 companies on 10 May 2016



Earn and Learn Programme

SkillsFuture Earn and Learn Programme (ELP) for Logistics



Head-start for fresh polytechnic/ITE graduates in relevant careers



Smooth transition to workforce



Professionals with deep skills

ELP Benefits for Fresh Graduates

Benefits of ELP

Upon Signing Up

During ELP

Upon ELP Completion



Sign-on incentive of S\$5,000¹

Deepen skills through company-based projects

Assigned workplace mentor

Well-structured training and career development programme

Wage increments²

How the ELP Works?

How ELP Works

01



You will be matched with a job related to your discipline of study

02



Undergo a 12- to 18-month structured training programme

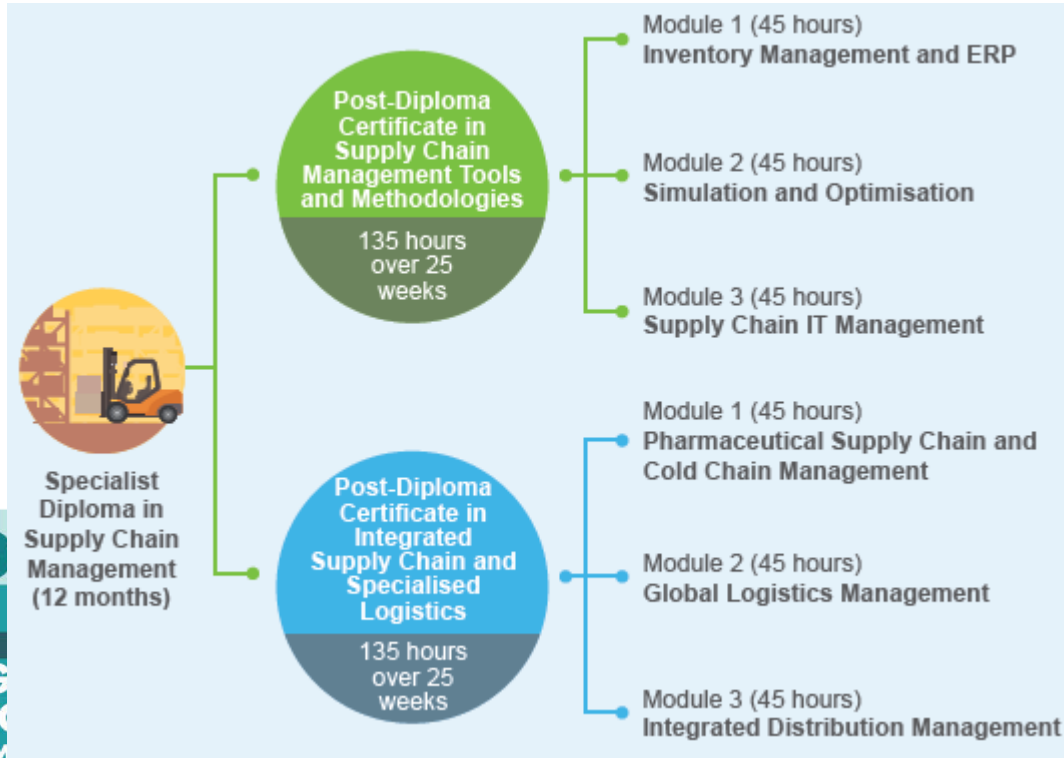
03



Course completion and receive an industry-recognised certification

Industry Recognised Qualification

Specialist Diploma in Supply Chain Management



Company-based project for each module

ELP for Logistics



✓ Strong Media Coverage



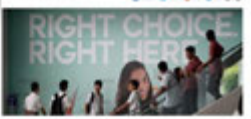
- ✓ Launched on 12 Oct 2015
- ✓ Highest take-up of 39 Placements
- ✓ 15 companies

✓ Industry validation



Poly grads start to Earn and Learn under new scheme

SkillsFuture ITE, poly grads get a chance to learn, earn and work



Lifelong Learning

Exemptions to UniSIM's BSc Logistics and Supply Chain Management (up to 1 year)

Level 1 Modules	Mode of Exemption
Management	Take challenge exam
Organisational Behaviour	Take challenge exam
Quantitative Methods	Take challenge exam
Statistics	Take challenge exam
Level 2 and Level 3 Modules	
Inventory Management	Auto- exempted
Information Management for Supply Chains	Take challenge exam. Auto-exempted if GPA \geq 3.0
Supply Chain Management	Auto- exempted
Warehousing & Material Handling	Take challenge exam. Auto-exempted if GPA \geq 3.0

What are the Learnings?



Let's go!

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Learning Points – Industry Collaboration

- RP SEG aims to support and serve industries of Singapore.
- Demonstrates pro-activeness and eagerness to collaborate with potential partners to work together for mutual benefits.
- Works closely with relevant industry associations to reach out to their members, such as
 - Singapore Logistics Association (SLA)
 - CILT Singapore
 - Singapore Aircargo Agents Association,
 - Container Depot Association (Singapore)
 - Supply Chain Asia
- Participates actively in industry committees from the perspective of an educational institute.

Moving Forward



Let's go!

**TRAINING AND
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SECTOR TRANSFORMATION PLAN

(TAESTP)

Future Directions

- RP SEG continues to collaborate with other polytechnics and ITE to better synergise effort in developing the future workforce for the logistic sector.
- Actively participate in the development and implementation of Logistics Skills Framework.
- Encourage sharing of best practices and deliberate effort in developing curriculum that is with industry relevance.
- Roll out SkillsFuture Education and Career Guidance (ECG) initiatives to promote the logistics sector to students.

Thank You

