A Suggestion of International Alliance of Logistics Education

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Abstract

In the modern corporate management, the importance of logistics fields is highly estimated, and it is necessary to discuss an international alliance of logistics education. The education of logistics engineering for university students is not easy for its specialty; the students cannot understand quickly just only with the systematic lectures, and thus PBL, or the Problem-based Learning has been recently considered as an effective solution. In addition, as for the international alliance, students among several countries should use English as their communication tool. In order to understand whole concept of logistics engineering among diverse students from different countries, English is useful as the common language to discussions in the class. Such background considered, this study suggests the outline of the syllabus of logistics engineering for international alliance.

Keywords: Logistics Engineering, PBL, English, International Alliance

1. Introduction

From an international point of view, the logistics education at universities and graduate schools has recently been considered globally; this is because its importance in the business field has increased.

Not only in Japan but also in many other countries, a logistics education at the university level has been implemented; however, an educational collaboration in this field will not be thoroughly considered.

This study will introduce a way of implementing logistics curriculum at a university in Japan, and the possibilities of international collaboration in the domain of logistics education will be discussed.
2. **An Outline of a University Education in Logistics**

The importance of logistics in modern management is high. The business logistics duties carried out for post-processing until the 1970s. However, due to the influence of information technology, business logistics should be strategically considered and efficiently promoted.

As a result, the improvement of university education came to be pointed out due to various aspects.

Fig.1 shows its educational significance. In other words, according to the increasing importance of business logistics, human resources and an education suitable for the time should be required—not only for business practitioners but also for the university students.

In addition, such an education should be systematically composed of a university curriculum. It should be not only theoretical but also practical, such as problem-based learning (PBL)\(^1\).

Systematic logistics education has only recently been tried at universities. It includes lectures about transportation theories from the viewpoint of a circulation channel theory and traffic economics from the viewpoint of marketing in the faculty of liberal arts or social sciences. However, not many years have passed since logistics engineering education was introduced from the viewpoint of the engineering and physical sciences.

![Diagram](image)

**Fig.1. Significance of a Logistics Engineering Education**

However, it is time to prepare a systematical education curriculum for logistics engineering. The education should combine case studies, numerical experiments, and computer simulations using the theories of Operation Research.

3. **Effort of an Education of Logistics Engineering**

The contents of a logistics education from the viewpoint of the physical sciences or engineering are presented in Table 1.

The portfolio aims at pushing forward effective training. For the methodology of the education, the PBL can be used in order for the students to harden the understandings of logistical concepts.

Students who will work in logistics companies will analyze management and logistics strategies
based on the knowledge and skills of logistics efficiency measurements. They will do so with an understanding of the business law framework and logistical issues’ numerical analytical capacities with real corporate data related to a logistics field, which will be required, such as: Demand Forecast, Linear Programming, Queue Theory, Place Optimization of Location and Facilities, Inventory Control, Network Planning, Transport and Delivery Problem Information System, Social Surroundings, and Key Performance Indicators. Each item will help the students get their effective educational achievement by setting the goal, solution, teaching method, and issues.

Table 1. Portfolio of Logistics Engineering Education

<table>
<thead>
<tr>
<th>Logistics Engineering Item</th>
<th>Objectives</th>
<th>Engineering Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demand Forecast</td>
<td>Basic Concept of Building Logistics Strategy</td>
<td>Introduction of Applied Engineering Approaches such as Moving-Average Method, Exponential Smoothing Method</td>
</tr>
<tr>
<td>Linear Programming</td>
<td>Seek for Maximum Profit, Minimum Cost with Mathematical Formulation</td>
<td>Linear Programming, Nonlinear Programming, Mathematical Programming</td>
</tr>
<tr>
<td>Queue Theory</td>
<td>Calculations such as Waiting Time for Shipment</td>
<td>Queue Theory</td>
</tr>
<tr>
<td>Place Optimization of Location and Facilities</td>
<td>Search for Optimized Location</td>
<td>Weber Model, Graph Theory</td>
</tr>
<tr>
<td>Inventory Control</td>
<td>Calculation of Optimized Inventory Level</td>
<td>JIT, ABC Analysis</td>
</tr>
<tr>
<td>Network Planning</td>
<td>Building of Network via a Shortest Route</td>
<td>Shortest Route Problem, Minimum Tree Problem</td>
</tr>
<tr>
<td>Transport and Delivery Problem</td>
<td>Minimize Transport and Delivery Cost</td>
<td>AHP, Logit Model</td>
</tr>
<tr>
<td>Information System</td>
<td>Building of Information System</td>
<td>Domain Analysis, Modeling</td>
</tr>
<tr>
<td>Social Surroundings</td>
<td>Analysis of Business Case Studies</td>
<td>Visit to Companies, Facilities</td>
</tr>
<tr>
<td>Key Performance Indicators</td>
<td>Indicators for Efficiency of Operations</td>
<td>Statistical Analysis of Major Indicators</td>
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</table>

4. International Alliance in Logistics Engineering Education

In the global corporate management, as it has been mentioned in this paper, the importance of logistics fields is highly estimated, however, the students cannot understand quickly just only with the systematic lectures, and thus PBL has been recently considered as an effective solution. As for an international interuniversity Alliance among universities in logistics engineering education, to bridge the barrier, several requirements can be found.

4.1 Use of English as a Tool of International Communication

In a few countries, such as Japan and the United States, the literature of logistics studies can be fully completed in their native language. In many developing countries, the literature and studies cannot be found in their native languages; however, the importance of logistics outruns the literature translations.
In such countries, the students have a strong motivation to deal with the group work in English \(^2\). Using English as an international communication tool can be effective among the students from different countries and different backgrounds in managing international logistics matters, such as forwarding, import and export control, and international shipment.

4.2 Problem-based Learning

In the second term of the university education, the students will understand the comprehensive responsibilities of international freight transportation. Each group will give a presentation before other groups on the transportation policy, related international laws, tariffs, and environmental policies using the related data and documentation. To understand important items (such as international transportation, global trade process, and customs) and select the transportation mode (such as road transportation by truck and by rail, sea transportation by ship, and air transportation by airplane), the students solve the problems given in the course. Each group first selects its own transportation mode to build an effective logistics system, and it then hands in the report, which is the basis for a one-hour presentation in front of the other groups. The introduction of logistics education was after that of production management. For logistics education, learning at a job site (not in an academic way but through experiences and practitioners at a job site) and passing as so-called an oral theory (such as On the Job Training [OJT]) has been highly estimated.

However, considering beginners’ education of logistics, it is not easy to help students understand basic knowledge and business skills in a short period. Thus, the logistics education under the international interuniversity collaboration seems to have been adapted only for advanced students who have already worked in a company for years. Even the beginners want to study logistics from the global viewpoint; this is because its operations are related internationally. Nevertheless, the understanding of the concept of logistics and its business flow cannot be accomplished by lecturers with technical literature and documentations; the educational effects may be limited.

For the solution, a PBL system (where the students solve issues in a group) can function well. The students can simulate a business process in a logistics field by solving issues given by the syllabus. In other words, the students can learn a series of logistics business through small group discussions, considerations, collaborations, and presentations before other groups.

Finally, the students will not only understand the theory but only get the skill of logistics business, which can be immediately used after graduation.

4.3 Syllabus in International Association

A sample syllabus of logistics engineering can be seen in Fig.1. The students from diverse countries (at least two countries), will be divided into small groups of 4-6 persons (including a tutor), and they will be given the issues in major problem areas, such as the concept of logistics and Supply Chain
Management, international freight transport planning, customer service policy, and global forwarding. The minute learning goals of each major problem are set with the catalogs of related companies, newspaper articles, URLs, and the guidebook for the solutions. Guest speakers can be made available if necessary.

![Significance of PBL in Logistics Education](image)

**4.3.1 Explanation of PBL**

In the first term, two objectives can be set: understandings of PBL and basic knowledge of logistics and Supply Chain Management, which will help the students deal with the problems offered later. Each group will confirm and discuss the logistics terms, such as Just In Time and Third Party Logistics, using some corporate catalogs. The presentation and report are imposed on each group.

**4.3.2 Seminar in Freight Transportation**

In the second term, the students will understand the comprehensive responsibilities on international freight transportation. Each group will give a presentation before the other groups on transportation policy, related international laws, tariffs, and environmental policy using the related data and documentation.

To understand important items (such as international transportation, global trade process, and customs) and select the transportation mode (such as road transportation by truck and rail, sea transportation by ship, and air transportation by airplane), the students will solve the problems given in the course. Each group first selects its own transportation mode to build an effective logistics system, and then it hands in the report, which will be the basis for a one-hour presentation in front of the other groups.

**4.3.3 Customer Service and its Satisfaction**

In the third term, each group will give a presentation on a customer satisfaction from the point of view of logistics service. First, the definition of customer service and customer satisfaction in the field of
logistics can be discussed to understand its importance and its required business items.

Concerning customer service, a score card will be made for quantitative analysis. Second, ordering and order receiving systems, inventory control, ABC analysis, and logistics support systems will be mastered. Related newspaper and magazine articles will be distributed to each group that are to present the fruits of the study. In addition, as the individual works, each student will formulate an inventory model using the real data while visiting an overseas logistics center or an office of an international logistics company.

4.3.4 Forwarding Process

As for the business operation of freight transportation, the logistics costs of a shipment process should be calculated. The students should discuss it in each group with the reference to corporate pamphlets, catalogs, and tariff tables; finally, each group will give a presentation in front of all their classmates.

5. Possibilities of Global Alliance

The global interuniversity collaboration can be achieved by using the relationship of an academic society such as the International Federation of Logistics and SCM Systems (IFLS), where universities from various countries are members. A collaborative course or seminar can take place in the summer.

This can occur not only in English-speaking countries but also in non-English-speaking countries, such as Eastern European nations and Asian countries, where the importance of logistics has recently increased. From the viewpoint of a Japanese university, increasing number of the students want to deal with logistical matters in English in order to fill an important role in the global business world; logistics education in alliance with overseas universities is a worthwhile task for the professor in charge.

6. Conclusion

This study suggests a plan of international interuniversity collaboration of logistics education as well as its significance and motivation, which are introduced in the sample syllabus and requirement. The collaborative surroundings can be arranged through certain academic organizations’ international relationships.

Notes and References
