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Bridging the Knowing-Doing Gap in Global Supply Chain Education

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Abstract:

Streamlining the operation of the extended global supply chain is challenging since it involves a multitude of information systems and companies in several countries. Academia partly fails to fulfill the demand for candidates with the knowledge and skills for executing international business transactions. Consequently, we lack candidates who can translate theory into actions, thereby creating a knowledge-doing gap. This paper contributes to bridging this gap by introducing a new learning activity: the global supply chain learning activity denoted as the GSC-Activity. The GSC-Activity lets students execute export and import transactions in an international business-to-business environment involving several companies while handling both the inter-company order flow and the internal order management cycles at each company using their ERP system. This provides student with deep exposure to the information flow along the chain and experience in executing export and import processes of each company. We provide a workable example of the GSC-Activity with a case study repeated over several semesters involving students from Australia and Norway.

Keywords: Education, Skills, Information Systems, ERP, Information Flows, Business-to-Business, Global Supply Chains, Import, Export, Business Processes.

I. INTRODUCTION

Developments in information systems and supply chain management have led to an increase in global trade operations. Competing in the global economy requires organizations to handle international business transactions efficiently across their supply chains. It requires understanding of the international business environment including trade agreements, terms of delivery, terms of payment, and technologies to execute business-to-business transactions in an efficient manner. Employees needs to be able to translate theoretical understanding into action in a multinational business context. Specifically, in complex business environments, an employee must act on information exchanged with multiple sources by using various information systems to handle information and goods flows across the extended network. Employees should understand global business processes, how they interact in global supply chains, and how information systems support and automate operations of each partner.

Given the growing importance of international operations (Faulconbridge & Beaverstock, 2009), academia needs to embed global business skills into its teaching in a creditable way. Indeed, academia (and governments and business organizations) have expressed this desire and claim that not responding adequately to the need creates a knowing-doing gap. One example from academia is the multinational research project led by the Harvard Business School that addressed students' preparation for working in increasingly complex global organizations commented on by Thompson (2008) and further detailed in the book by Datar, Garvin and Cullen (2010). These researchers investigated to what extent business education satisfy the society's needs for competencies in three dimensions: 1) knowing, 2) doing, and 3) being. They express knowing as disciplinary knowledge (i.e. theory), doing as practical skills, and being as a sense of purpose and identity. This research showed that there were unmet needs related to doing in particular, especially in a global environment: "Most agreed that business schools are skilled at know-what —teaching disciplinary and functional knowledge. But they fall down on know-how—teaching students how to think beyond information silos and to be more self-aware as leaders" (Thompson, 2008, p. 2). Further, they state:

> If you have global frameworks that are robust and travel across boundaries, you don't actually have to teach management country by country. So the first order of business for us is to get the global content right so that when our students graduate they can work for a company that is operating in multiple geographies. (Thompson, 2008, p. 2-3)

A call for focus on skills has also been put forward by international organizations. The OECD reports an increasing concern of the mismatch between workers' qualifications and skills and the tasks they are required to take in their jobs (OECD, 2011). This trilogy of knowing, doing, and being is in line with the European Qualifications Framework (EQF), which specifies learning outcomes as knowledge, skills, and competence, and emphasizes practical and technical skills (EQF, 2008). The Australian Qualifications Framework (AQF, 2013) complements the EQF in that it also focuses on knowledge and skills and their application. The business community has expressed similar concerns: for example, the Amber Road research report (2012) highlights the fact that skills in executing the steps required for moving goods across international borders has been largely overlooked compared with other areas in the supply chain. Academia has a long tradition of covering the knowing and being aspects by their focus on theory development and understanding, which business schools' curricula reflect. However, many have called to integrate practical skills in higher-business education (Datar et al., 2010; OECD, 2011; Amber Road, 2012; EQF, 2008; AQF, 2013).

In this paper, we address the skills component of global supply chain operation by implementing the order management cycle—from initial customer interaction through order capture, fulfilment by sourcing, and returns processing—throughout a realistic global supply chain that includes several companies each operated by an internal ERP system. We call this the global supply chain activity (the GSC-Activity). Our approach adopts Shapiro, Ranganc, and Sviokla's (1992) idea of challenging executives to literally follow an order through the full order management cycle to learn what their companies' customers are experiencing in interacting with them. In this paper, we extend this idea by having students follow an order through export and import order-management cycles in each company of a global supply chain. The GSC-Activity is unique since executing trade operations of each company in a global supply chain would be very hard to do in a real business environment in which companies operate as a part of several different supply chains. Getting such knowledge by a single person in the business world would normally require several employments in several companies in several countries over several years. We concentrate on the fulfillment process since it is the thread that links demand and supply across the chain; it is the central element of business operations. In our study, focusing on the fulfillment process led students to consider other elements as

well, such as elements of governmental regulations, taxation, and the use of third party service providers. By using a global supply chain environment, students were put in a situation in which they had to run their business with a real-life ERP system. Our approach of doing order fulfilment through several companies along a global supply chain is a novel teaching approach since it follows the execution of business-to-business transactions throughout a realistic chain of companies that each use their own ERP system.

The GSC-Activity can be conducted by a single university but, because this does not consider the global issues involved in global trade, such as different time zones and cultures, we recommend cooperation among two or more universities. In the GSC-Activity, each student must execute the sourcing (import) and distribution logistics processes (export) of an imaginary company. With their ERP system, students interact with international customers and suppliers by receiving and sending orders; that is, by importing and exporting their products to complete the cash-to-cash cycle for both export and import. For this to be effective and for students to be immersed in real-world experiences, we adapt the theory of experiential learning as the pedagogy framework (Kolb, 1984). An additional unique aspect of the GSC-Activity is that it is a self-contained activity that can be used as a part of a variety of courses and topics (by course, we mean a course, unit, class, or module at a university). Its learning-by-doing style demands few prerequisites to conduct, which minimize the administrative burden of using it.

Global Supply Chains, ERP Systems, and Information Exchange

We use "global" here to denote operations across several countries, and "international" to signify operations between two nations. One common way for organizations to address increased global competition is to join forces with other organizations and form strategic partnerships in supply chains (Brandenburger & Nalebuff, 1996). Collaborative global supply chains are supply chains spanning multiple organizations that are each located in a separate country (Christopher, 1992). The GSC-Activity consists of a global linearly networked supply chain connecting a manufacturer with an end customer by a series of intermediaries (e.g., suppliers, distributors, and retailers) in separate countries. The chain has two main types of flows, an end-to-end information flow going in both directions, and a product flow going in one direction from the manufacturer to the customer. Our focus is the end-to-end information flow. It is broken down into a series of customer-to-business (C2B), business-to-customer (B2C) and business-to-business (B2B) flows (see Figure 1). A trade operation is initiated from the end customer, which makes the order propagate through the chain as part of the C2B and B2B information flows in a pull fashion. The inbound orders from downstream partners are input for inventory, production and distribution decisions at upstream partners. We use a demand-pull system following the trend of increasing customer influence. Each company handles their internal order management cycles (OMCs) by their ERP-system and their external relations by business-to business (B2B) messages.
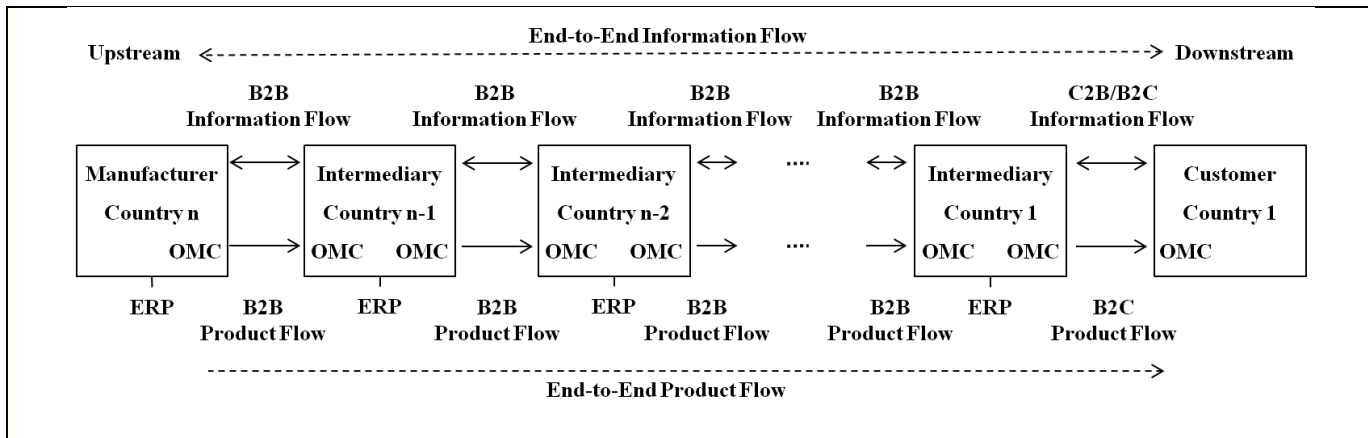
Figure 1. A Global Supply Chain

The generic product flow in Figure 1 involves a complex set of interactions at each leg in the supply chain. To illustrate the complexities involved at each business-to-business transaction, we include Figure 2. The figure shows the typical volume of information exchange between a supplier and a customer in an international supply chain for business-to-business (B2B) transactions. It includes information exchanged with third party service providers and with governments. The number of documents exchanged by a given stakeholder is in blue, while the number of stakeholders interacting with a certain stakeholder is in red, and the total number of interactions of a given stakeholder with all other stakeholders for all documents is in green. Our focus is the customer–supplier B2B transaction and the sub-set of five order-related documents representing the core of the 13 documents exchanged in this transaction.
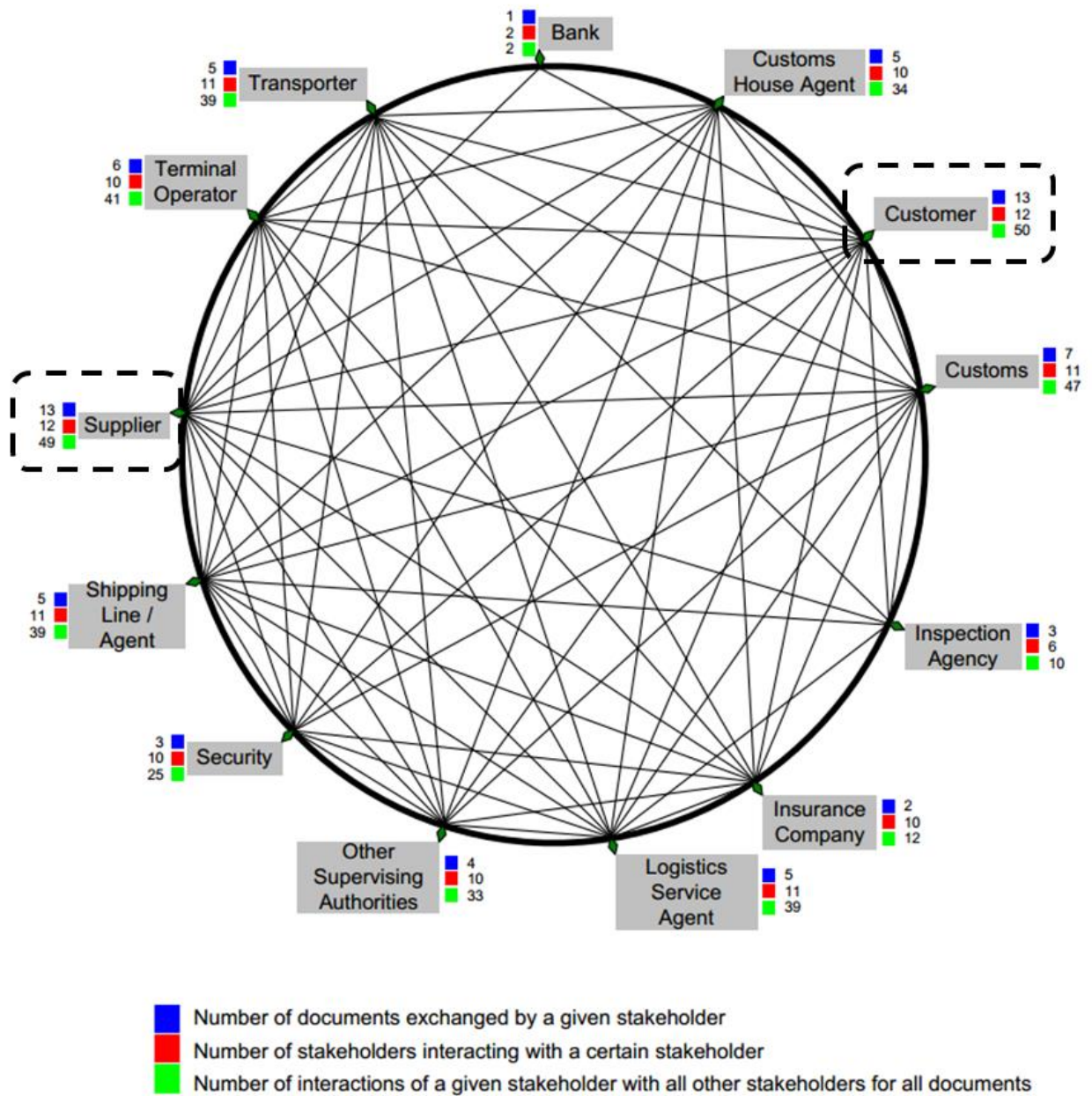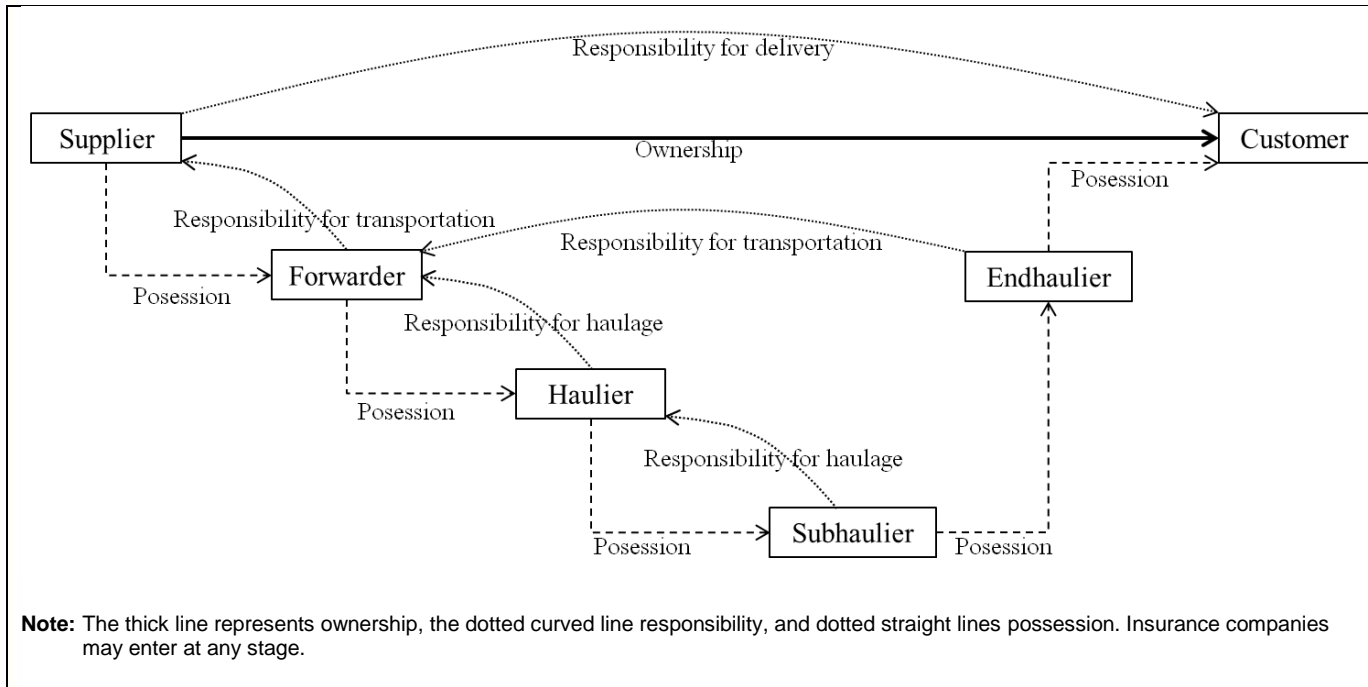
Figure 2. Volume of Information Exchange in a B2B Transaction Being Part of a Global Supply Chain (Adapted from Zografos et al., 2013)

In the GSC-Activity, we follow the order through several order-management cycles as it ripples through the chain that involves several B2B transactions. A single foreign trade B2B transaction typically requires an exchange of around 13 documents see Figure 2)), but it may, in some instances, require more than 100 separate documents including certificates of origin, commercial invoices, shippers' export declarations, and shippers' letters of instruction (Murphy & Wood, 2010; UNECE, 2008; Zografos et al., 2013). The five order-related documents exchanged are purchase orders, confirmation of purchase orders, packing lists, invoices, and payment notifications.
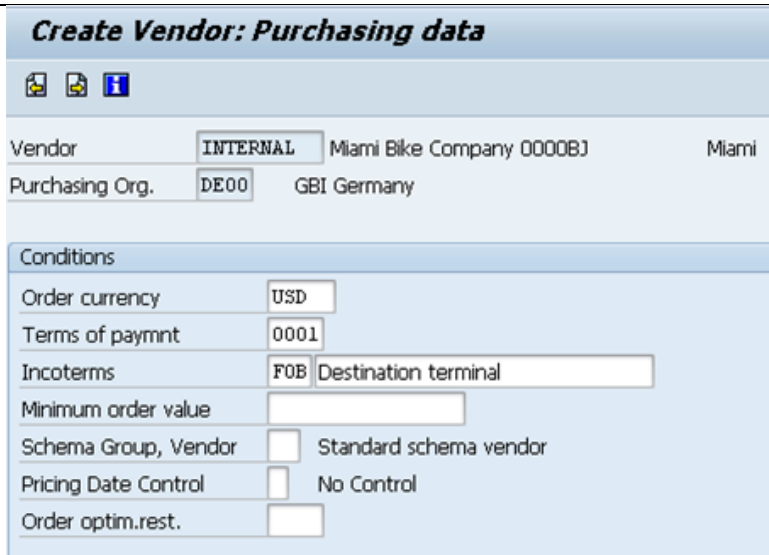
Using ERP Systems

First, note that we use the terms ERP systems and enterprise systems interchangeably. Companies use ERP systems to support and automate their internal operations. Currently, no common information system for external supply chains exists. Instead, the majority of flows in the external supply chains depend on semi-manual processes involving emails that contain commercial documents and possibly other documents such as spreadsheets created by using an ERP-system in each company in the global supply chain. This results in a chain with a disparate set of ERP systems (see Figure 1). ERP systems are conducive to global business processes in each company because they encompass local, national, and international tiers by ensuring compliance with financial and legal requirements

at each level of an enterprise. In each company, ERP systems handles order management cycles, currency conversions, time and location adoption, consolidation across accounting standards, multilingual facilities, legal control, sanctioned party screening, and import-export compliance checks. Companies needing extra functionality over their ERP system offerings use specialized enterprise systems such as global trade management systems and collaborative planning, forecasting, and replenishment systems (Amber Road, 2012). In this paper, we assume the ERP system supports all of a company's internal functions. From an educational point of view, using an ERP system blurs many of the details involved because many of the operational issues are implemented by preconfigured parameter codes, and because several operations are automated. For a student, it is not obvious how parameters in theoretical models are operationalized in ERP systems, which need to be explained and demonstrated as in the GSC-Activity. For example, consider the terms of trade that must be specified for a transaction to take place. The terms of trade regulate costs, control, and liability involved with shipping goods. It has a direct financial impact on a company's business; thus, it can mean the difference between a loss and a profitable trade. Students are aware of this general concept from standard courses in supply chain management and accounting. For instance, the jurisdictional transaction flow can illustrate the ownership, possession, responsibility, and liability issues involved (see Figure 3).

Note: The thick line represents ownership, the dotted curved line responsibility, and dotted straight lines possession. Insurance companies may enter at any stage.

Figure 3. Terms-of-Delivery Elements by Breakdown of the Jurisdictional Transaction Flow (Adapted from Tilanus, 1997)

The regime in Figure 3 is communicated along the chain using parameters in the trade documents. These trade documents are generated by an ERP system based on configured parameters. Converting such knowledge as in Figure 3 into action to a company's benefit requires workers who can link company-specific parameters to operational parameters in the company's ERP system. The GSC-Activity provides this link between theoretical knowledge and practical skills. Continuing our terms of trade example, the terms agreed on the control of the fright is entered into the ERP system at each company using the SAP ERP menu "Create vendor: purchasing data" (see Figure 4). Specifically, the theoretical terms-of-delivery concepts of in Figure 3 are operationalized into ERP master data when a new foreign supplier is created. Students translate concepts in Figure 3 into a specific international commercial term (incoterm) (e.g., "FOB, Destination terminal"; see Figure 4). Incoterms are standard international sales clauses used in international and domestic contracts. Other master data such as transportation mode and terms of payment in exports and imports are specified in the same manner by specific codes. The terms of payment also have a direct financial impact on a company's business since these terms specify the cash discount rate and the number of payment terms (discount periods). To decide on the terms of payment, the supplier on the one hand considers a customer's financial condition or credit worthiness. The customer, on the other hand, considers the supplier's ability to deliver on schedule, in full, and maybe ability to deliver on other performance metrics. In the GSC-Activity, students need to decide on these details and enter them into the ERP system at hand. The ERP system uses these master data later by default when executing transactions with the supplier (see further details in Jæger, Rudra, Aitken, Chang, & Helgheim, 2013).

Create Vendor: Purchasing data

Vendor	INTERNAL	Miami Bike Company 0000BJ	Miami
Purchasing Org.	DE00	GBI Germany	

Conditions

Order currency	USD	
Terms of paymnt	0001	
Incoterms	FOB	Destination terminal
Minimum order value		
Schema Group, Vendor		Standard schema vendor
Pricing Date Control		No Control
Order optim.rest.		

Note: Screenshot from case study that operationalizes: terms-of-delivery by incoterm "FOB (free on board), destination terminal" and terms-of-payment by 0001 corresponding to "payable immediately due net".

Figure 4. Screenshot of SAP ERP Menu

Global Supply Chain Flows

Two main types of flows are associated with an external supply chain shown in Figure 1 is a simplification: generally, product flows may diverge and proceed to different actors, or they may converge to form a joint product. Likewise, we can see the end-to-end- information flow as a series of B2B information flows, each being an aggregation of sub-flows containing commercial order flows, jurisdictional transaction flows, and financial flows with payment transactions (see Figure 5).
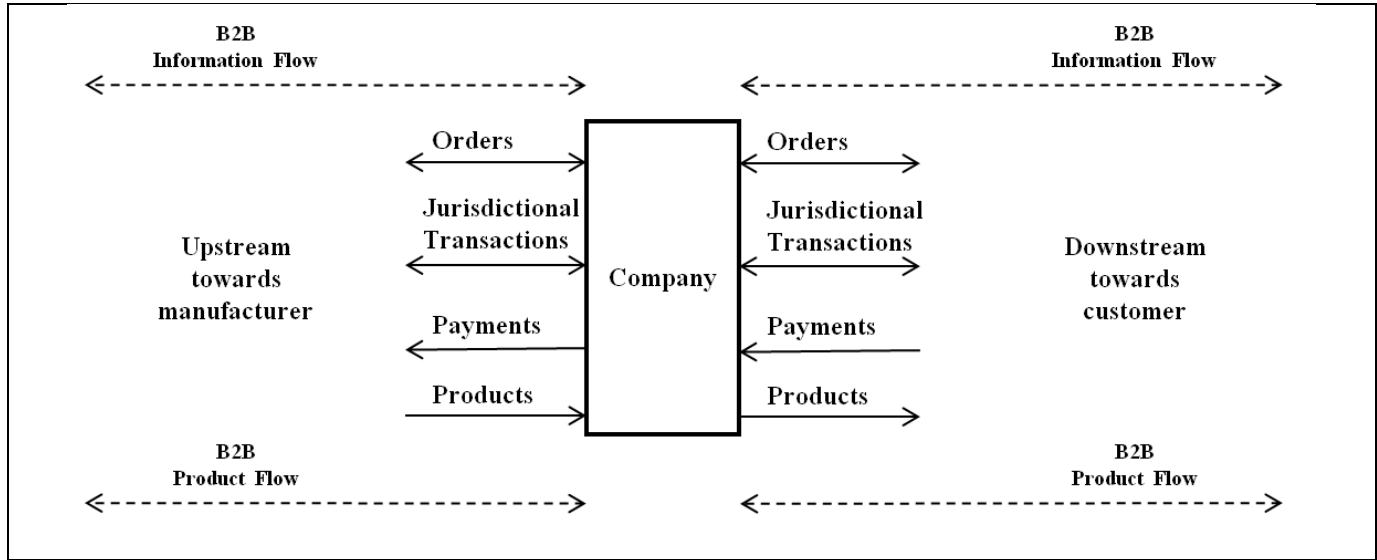
Figure 5. B2B Product and Information Flows including Orders, Jurisdictional Transactions, and Payments

The constituents of B2B information flows are realized mainly by parameters in the five trade documents purchase orders, confirmation of purchase orders, packing lists, invoices, and payment notifications, which we discuss in the case study later on (see Figures 8 and 9).

These examples show how students operate the global supply chain by specifying details of financial importance. Such linkage between theoretical concept and operational action are not normally covered in standard courses. The GSC-Activity connects inner operations of the order management cycle with the B2B transactions along the chain. The basic steps in the order management cycle are common to all companies, and, thus, handled in a similar

fashion by all ERP systems. From an educational point of view, this makes the learning outcome transferable to any global supply chain. A basic export order management cycle (export OMC) consists of receiving and fulfilling customer orders, sending invoices, and receiving payments for sales. The key steps in the import management cycle (import OMC) are creating and sending purchase orders, receiving products or services, receiving invoices, and sending payments. The order handling drives the supply chain by linking demand with supply along the chain.

Supply Chain Effects

The students pretend to deliver a physical product according to an order received from a foreign customer. This forces them to focus on the detailed data involved and to connect real operational performance with concepts such as lead times, demand and supply variability, supply chain flexibility, master data management, and information distortion along the supply chain. With a deep exposure of details and hands-on operation of order management cycles, students connect practical skills to their theoretical understanding gained in other parts of their curriculum. One such example of general concept would be the bullwhip effect, a standard topic covered in supply chain management classes. The standard theoretical presentation of the bullwhip effect describes how information in the form of order volumes along the chain tends to be distorted. This distortion can misguide upstream members in their decisions (Lee, Padmanabhan, & Whang, 1997). It is well known that a proper coordination of the information flow can reduce or eliminate the bullwhip effect (Lee et al., 1997). In a real global supply chain, when information is entered into and extracted from the ERP system at each company by various workers, each worker has limited visibility of the global supply chain information. This limited visibility makes it hard to get the big picture of how order volume, pricing, and delivery conditions affect the total operation of the global supply chain. The GSC-Activity presented in this paper provides an understanding of the detailed data in the end-to-end information flow along the chain. Getting such insight across a global supply chain can be achieved in an educational setting by the GSC-Activity, while being much harder in a real business environment.

Related Literature

Both globalization and the use of information systems in higher education have received attention from scientists, but then mostly as separate themes. Globalization is typically linked to business and management education, whereas the information systems educational domains generally consider curriculum development of information systems programs. Considerably less work combines the two themes. One such work is done by Beise, Webb Collins, Niederman, Quan, and Moody (2005), who suggest a course on global information systems combined with international business topics covering the four areas: 1) background on global business environments; 2) management and implementation of information systems in a global context; 3) information systems topics covering e-business, ERPs as key global applications, global supply chain management, and knowledge management; and 4) functional area-specific information on global shipping, accounting, finance, manufacturing, human resources, and knowledge management. However, they do not provide details for such a course or experience from its implementation. Our GSC-Activity can be seen as responding to area three. In a review of education in business process management, Bandara et al. (2010) found courses addressing inter-organizational business processes with cases to illustrate the complexities of coordination across business partners, for example, by a retailer implementing CPFR (collaborative planning, forecasting, and replenishment) with its vendor. Some universities analyzed by Bandara et al. (2010) provide courses on how enterprise systems support and integrate business processes in a single company.

Our focus differs from these efforts by letting the students execute trade operations of an extended supply chain that involves several companies in several countries and the use of several ERP systems. Also, we designed the GSC-Activity to be a part of existing courses, not as a dedicated class, which facilitates easy integration into existing curriculums. The GSC-Activity is constructed as an experiential learning process since the benefits of experiential learning in business education are well established (Paul & Mukhopadhyay, 2005; Williams & Chinn, 2009; Cotner, Jones, & Kashlak 2004). In essence, following Kolb (1984) and Itin (1999), experiential learning involves 1) action, 2) reflection, 3) abstraction, and 4) experimentation phases. Our presentation of the GSC-Activity follows these phases by having a section for each phase (see Figure 6). We present action (phase one) in Section 4, reflection (phase two) in Section 5, abstraction (phase three) in Section 6, and experimentation (phase four) in Section 7. Before presenting each phase, we describe our experiential pedagogical approach in Section 2. In Section 3, we describe the specific global supply chain we used in our case study. In Section 8, we present the questionnaire we used to test students' perceptions of the GSC activity and, in Section 9, discuss the results. In Section 10, we reflect on our work and provide recommendations and, in Section 11, we conclude the paper.

II. EXPERIENTIAL PEDAGOGICAL APPROACH

Kolb (1984) defines learning in the context of the experiential learning process as "a process whereby knowledge is created through the transformation of experience" (p. 38), while Itin (1999) defines experiential learning as "the change in an individual that results from reflection on a direct experience and results in new abstractions and

applications" (p. 92). Itin (1999) distinguishes between experiential learning and experiential education. He asserts that experiential learning "rests within the student and does not necessarily require a teacher", whereas experiential education "must include or make clear the transactive component between teacher and learner" (p.92). Thus, experiential learning can be said to be in contrast to traditional university classes in which teachers lecture to students (Snider & Balakrishnan, 2013). With the GSC-Activity, we draw on the experiential learning concept, and provide the learner with direct experience by having them make decisions, observe the corresponding results, map them to theory, and explore new situations. Experiential learning as underpinning pedagogy provides a learning experience that combines theoretical knowledge with practical skills (Itin, 1999; Kolb & Kolb, 2005). Specifically, Kolb's (1984) learning cycle consists of the four phases 1) concrete experience, 2) reflective observation, 3) abstract conceptualization, and 4) active experimentation. Our presentation of the GSC-Activity follows Kolb's learning cycle as shown in Figure 6.
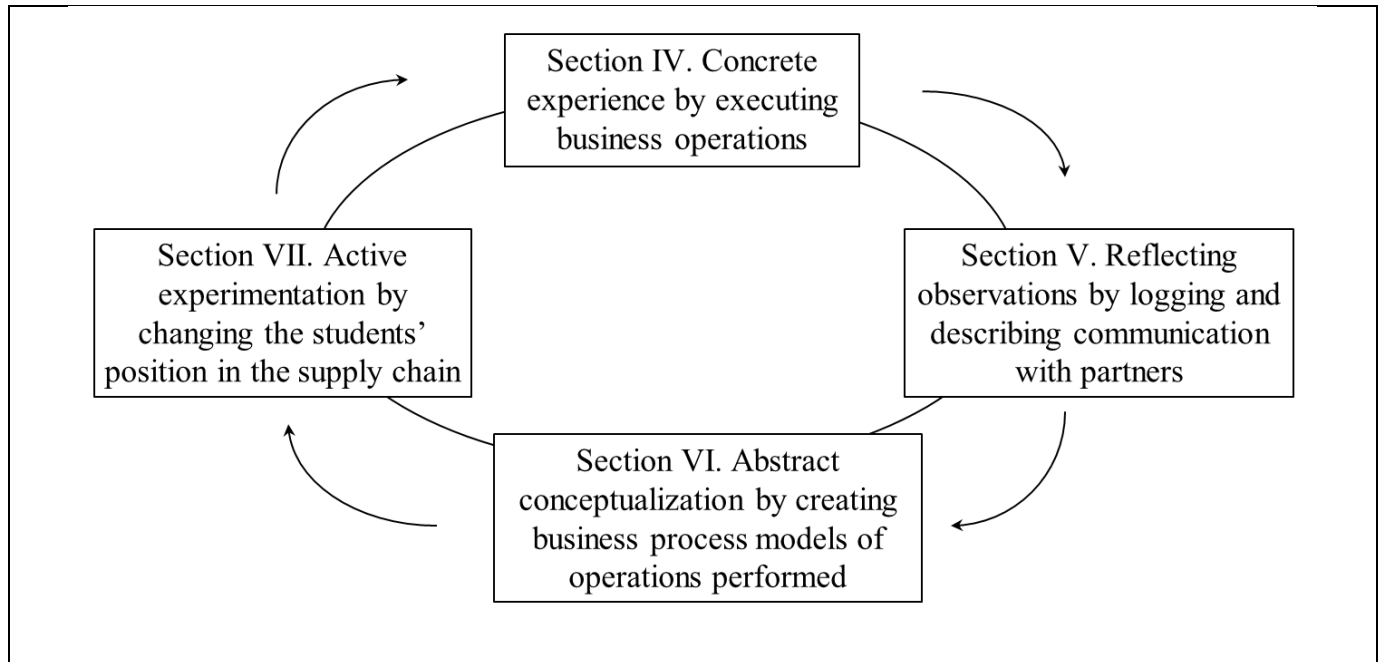
Figure 6. Overview of the Phases of the GSC-Activity Presented in Sections 4-7

This cycle becomes a learning spiral through which the learner is brought to a new level of understanding each time the cycle is completed. By executing several cycles with varying roles and collaborating with various international partners, students get hands-on experience in a variety of business situations. This variety contributes to their understanding of the integrated nature of the business processes and provides the skills to execute them. Providing factual information by exposing students to the complexity of international business transactions gives them actionable knowledge applicable when entering the workforce. This is a way of "making space for development of expertise" as Kolb and Kolb (2005, p. 208) promote:

> *The process of learning depicted in the experiential learning cycle describes this recursive spiral process of knowledge development. Space needs to be created in curricula for students to pursue such deep experiential learning in order to develop expertise related to their life purpose.*

The GSC-Activity provides such a space. It consists of learning materials and practical hands-on exercises that provide both theoretical knowledge and practical skills. Designing it as an activity, instead of a new unit or course, minimizes the administrative work needed for implementing it in a curriculum because it can be a part of existing courses, and leaves the decision about whether to include it to the professor responsible for a course. Before presenting the GSC-Activity, we establish a common ground for using the activity by stating three prerequisites (for further details, see Jæger et al., 2013).

Prerequisites

ERP System

A major element in a real global supply chain and, thus, in the GSC-Activity, is an ERP system. Both universities involved in the case study were members of the SAP University Alliances Program (SAP UAP, 2014) that provides

worldwide support for universities using SAP in their course offerings. Molde University College in Norway was connected to the SAP service in Magdeburg, Germany, while Curtin Business School in Australia was connected to the SAP service in Queensland, Australia. All SAP university alliance program centers run the same SAP software and offer the same working SAP system pre-configured for a company with global reach: the Global Bike Company, Inc. (GBI). This basic set-up, used by hundreds of universities worldwide, provides a solid foundation on which we build our GSC-Activity. The material SAP provides focuses on a single enterprise's internal operation. It includes downloadable exercises and slides for lectures. There is also a textbook by Magal and Word (2011). Note that an ERP system from any vendor can be used for the GSC-Activity. However, not using SAP might require more work by the lecturers in setting up the ERP system for the GSC-Activity (see Section 10 for details).

Business Process Knowledge and Skills

Students must have a basic understanding of how business processes are implemented in a system such as SAP ERP. In our case, we used the GSC-Activity as a part of two existing courses: Business Enterprise Systems 653 at Curtin University and IBE700 Enterprise Systems with SAP at Molde University College. These courses had a similar structure. The first half of the courses (around seven weeks) provided basic understanding of business processes and skills in execution of basic order management cycles (OMCs), while the remaining time focused on the GSC-Activity and a role play on the procurement of an ERP system. The educational material that covered the basics in the first half of the course is available from ERP vendors and instructional books. In the labs, the students learn basic skills in using an ERP system by SAP University Alliances Program (SAP UAP 2014).

Foreign Trade Data

The academic offerings by vendors such as SAP and Microsoft (SAP UAP, 2014; Microsoft DynAA, 2014) do not provide educational material for running global supply chains. Thus, instructors must prepare specific issues needed to run the GSC-Activity. In this case, we extended the configuration provided by the SAP University Alliances Program with organizational and master data to support import and export operations between the countries in question (i.e., Norway, Germany, the USA, and Australia). Our case involved students in Australia and Norway operating companies in these four countries using the SAP ERP platform physically located in Germany and Australia.

III. GLOBAL SUPPLY CHAIN USED IN A CASE STUDY OF THE GSC-ACTIVITY

We performed a case study over several semesters to demonstrate how the GSC-Activity can be used. In the case study, we set up a global supply chain consisting of four companies (see Figure 7). A separate SAP ERP system supports each company. We denoted the companies as bike companies (BC) since they simulate the trading of bikes: the companies were Perth BC Australia, Dallas BC USA, Bonn BC Germany, and Molde BC Norway. An end customer creates the initial shopping event that triggers the end-to-end information flow along the chain. Figure 7 shows the breakdown of the end-to-end information flow into a series of customer-to-business (C2B), business-to-customer (B2C) and business-to-business (B2B) flows for the case study.

Note that the actual type of product the companies' trade is of little importance because the B2B information flows and the order management cycles at each company are generic across companies and product types. A company could be a retailer, a distributor, a whole seller, or a manufacturer. The stick figures of persons in Figure 7 illustrate that the operation of each company is a semi-manual process. Employees at each company operate their internal order management cycles (OMSs) by using their ERP system. They retrieve and insert information needed to execute the external export and import business transactions that constitute the B2B information flows.
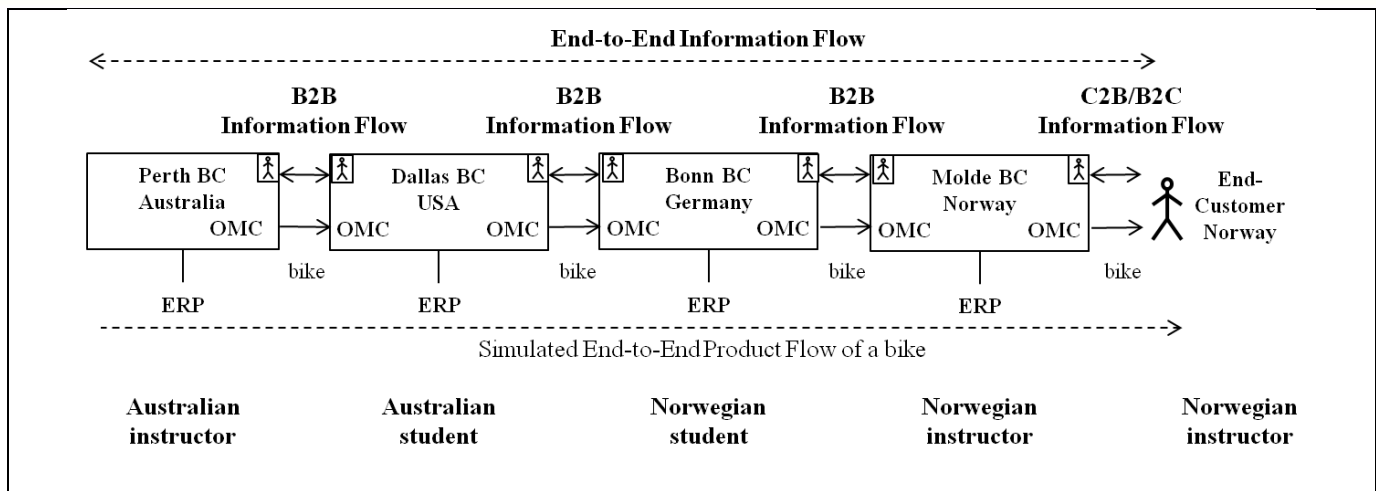
Figure 7. Demand-Driven Global Supply Chain and Role Assignments Used in the Case Study

End-to-End Global Supply Chain Operation

As Figure 7 illustrates, the end customer in Norway (typically a consumer) places an order with the retailer Molde BC Norway. This order triggers a series of import and export operations along the chain that stop at the manufacturer Perth BC Australia. This is a demand-driven supply chain where a company, on receiving an order from a foreign downstream customer, imports the item(s) from its upstream foreign vendor to export it to the foreign downstream customer. In our example, Molde BC Norway receives the order and handles it internally using its ERP system first by starting its sales process. When Molde BC Norway finds that its stock is empty, the sales process is temporarily halted while the company starts its import process with the foreign vendor, the Bonn BC Germany. Bonn BC handles it internally by starting its export process. Its stock is empty; thus, the export process is temporarily halted while the company starts its import process with the foreign vendor, the Dallas BC vendor in USA. Dallas BC, in turn, acts in the same manner as Bonn BC: it starts its export process, halts it, and runs its import process with its foreign vendor, the Perth BC Australia. Perth BC, being the last company in the chain, starts its export process, then halts it while fulfilling it internally by manufacturing the order. On completing the order, the export process is resumed, the order is shipped to its foreign customer, Dallas BC USA. Dallas BC USA completes its import process before resuming and completing its export process with Bonn BC Germany. Bonn BC Germany completes its import process, resumes and completes its export process with Molde BC Norway, the last company. Finally, Molde BC completes its sales process by delivering to the end customer (consumer) in Norway. This constitutes a complete end-to-end order flow as a part of the fulfillment process through the global supply chain.

Typically, the data values constituting the end-to-end information flow change for each B2B information flow along the chain as each company receives, stores, processes, and forwards the data. Figure 8 illustrates selected items of the master data of each ERP system along the chain. The ID, description, and sales price vary by company, country, and language—even if they represent the same product. Figure 9 links the master data with the upstream and downstream B2B information flow of Dallas BC USA by showing the messages exchanged using the master data values in Figure 8. As Figure 9 shows, a specific B2B information flow consists of the data in five messages: 1) the purchase order, 2) the corresponding order-confirmation, 3) the goods issued message, which simulates the actual shipment of goods, 4) the invoice, and 5) the payment message, which simulates the payment via a bank.
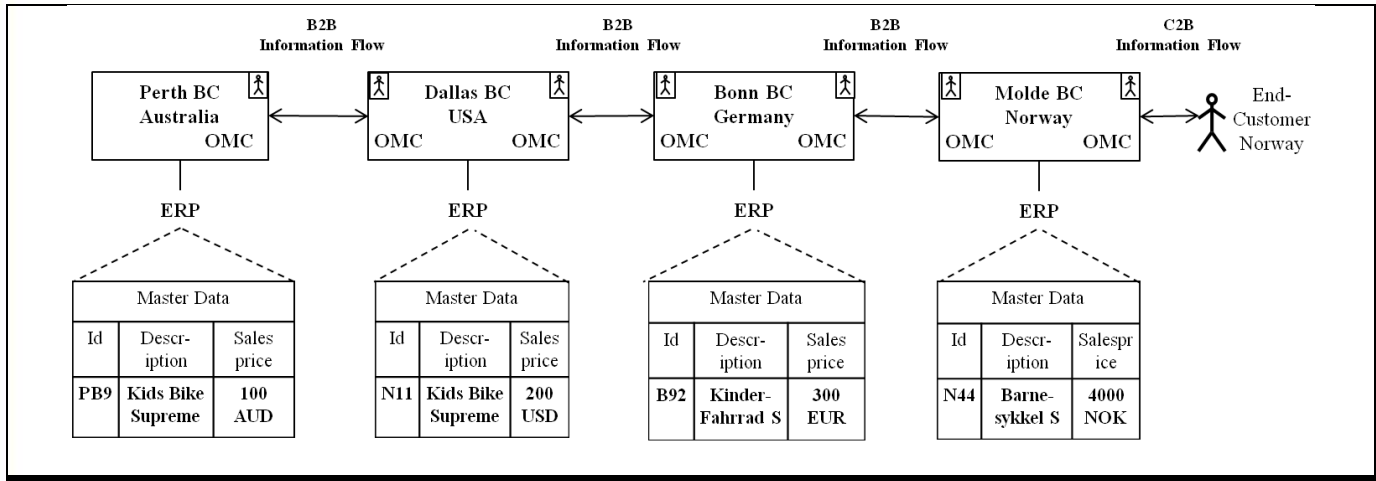
Figure 8. Case Study Overview Showing Master Data in Each ERP System
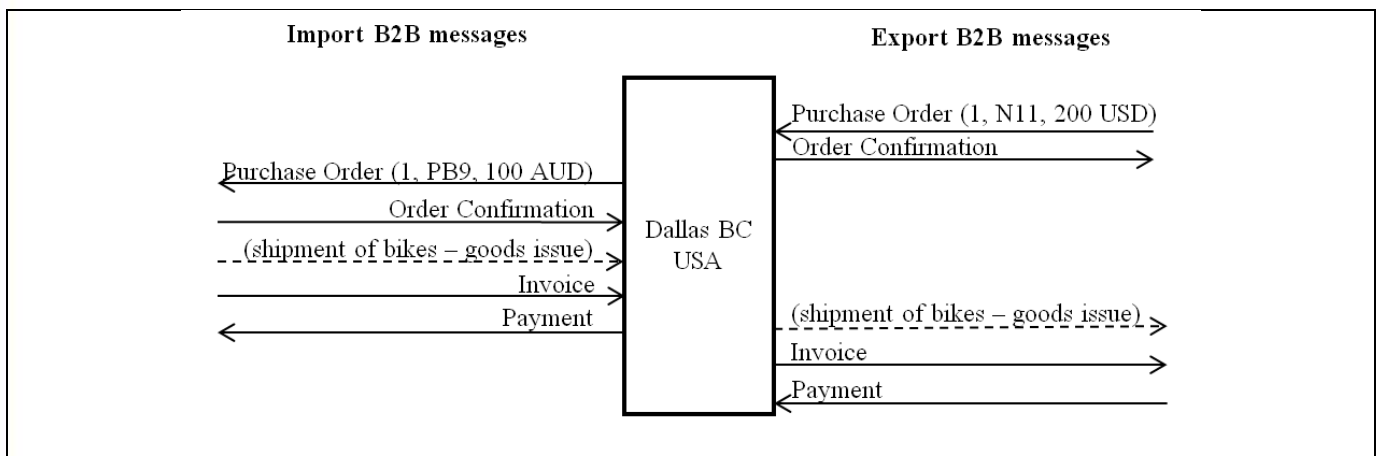
Figure 9. Documents in the B2B Information Flow for Export and Import by the Dallas Bike Company (BC) USA

IV. CONCRETE EXPERIENCE BY EXECUTING BUSINESS OPERATIONS

In our educational case study, the Australian students, the Norwegian students, the Australian instructor and the Norwegian instructor acted as business partners in the global supply chain (see Figure 7). We assigned each Australian student with a Dallas BC USA company, and each Norwegian student a Bonn BC Germany company. The stick figure in Figure 7 illustrates the manual interface where one or more persons handle (1) messages in the B2B or C2B information flow, and (2) the associated internal order management cycle (OMC) by using the ERP system. In real life, several employees in several departments in each company would be involved in running the export and import business processes. Typically, a sales agent handles export activities, a warehouse worker handles product shipment and receiving activities, an accountant handles incoming and outgoing invoices and payments, and a purchaser handles import activities. The instructions for the GSC-Activity provided to the students explain each role and its associated actions (see Figure 10 for an example; see Jæger et al. (2013) for the complete set of exercises).

Exercise SD 1: Create Sales Order

Purpose of Exercise	
As a sales agent responsible for export, create a Sales Order for the bikes specified in the Purchase Order received from the foreign customer.	
Menu Path	Logistics → Sales and Distribution → Sales → Order → Create

The **Create Sales Order: Initial Screen** appears.

1.   Type   **OR** in the **Order Type** field.

Figure 10. Excerpt of Sales and Distribution (SD) Exercise 1 that Shows the Role Specified, the Menu Path, and the First Step

The type of internal information system each actor uses is opaque to the other participants in the global supply chain. The system may be an ERP system from SAP, as in our case, or it can be from another ERP vendor. All communication between companies is handled via emails as we describe below. In this way, each partner is free to choose how to handle its internal operation using any ERP system—as in real global supply chains. Our focus here is the information exchanged between a company and its trading partners. We assign the roles as follows: the head of the logistics department of Bonn BC in Germany is assigned to a Norwegian student (Figure 7) and the head of the logistics department of Dallas BC in USA is assigned to an Australian student. In the position as head of the logistics department, the employee executes all activities for all the roles related to import and export. Thus, each student performs multiple roles. Also, in this example, instructors run the other companies (Figure 7). Role assignments are flexible: the head of the logistics department could, for instance, be separated into two roles, one being a sales manager handling export and the other being a purchasing manager handling import.

Execution of Business Operations in the Case Study

The end customer in Norway orders a Kids Bike Supreme from Molde BC in Norway by paying 4000 Norwegian kroner (NOK). The bike's unique characteristics are high quality at a low price. One reason for the low price is that the four companies in the supply chain have a zero-stock agreement for the bikes. When the head of the logistics department at Molde BC, Norway receives the order, this individual starts the export process by creating a corresponding sales order in the company's ERP system. Next, the stock level is checked using the ERP system. The stock is empty as expected due to the zero-stock agreement. The head of the logistics department halts the export process temporarily to run the import process. The roles covered by the head of the logistics department include the role of a purchaser. Thus, the head of the logistics department imports the bike from the foreign vendor Bonn BC in Germany, who sells the bike for £300. A purchase order is created using the ERP system, saved to a PDF file, and sent by email to Bonn BC in Germany. Now, the Norwegian student who acts as the head of the logistics department at Bonn BC in Germany receives the purchase order, which triggers the company's export process. The order is confirmed, the stock level is found empty as expected, and the export process is halted temporarily to import the bike. The head of the logistics department of Bonn BC, orders the bike from the vendor, Dallas BC USA for US$200 (see PurchaseOrder(1,N11,200 USD) in Figure 9). Also, see Figure 9 for the remaining description of this example. Dallas BC is run by the Australian student acting as the head of the logistics department. Now this individual confirms the order (Order Confirmation) before importing the bike from its vendor, the foreign Perth BC in Australia who sells the bike for AU$100. A purchase order is created using the ERP system. It is saved to a PDF file and sent by email to Perth BC in Australia as PurchaseOrder(1,PB9,100 AUD).

Perth BC, being the company at the end of the supply chain, produces the bike and exports it to Dallas BC, USA. The head of the logistics department at Perth BC simulates shipment of bikes by sending an email notification to Dallas BC followed by an invoice of AU$100. Dallas BC receives the bike and pays the invoice using the ERP system (Payment). This payment completes the import process of Dallas BC in USA. The bike is in stock, so the export process of Dallas BC resumes. The head of the logistics department simulates shipment of bikes, by sending an email notification to Bonn BC in Germany, followed by an invoice of US$200. The head of the logistics department at Bonn BC receives the bike and pays the invoice using its ERP system. This payment completes the import process of Bonn BC in Germany. The bike is in stock; thus, the export process of Bonn BC resumes. The head of the logistics department simulates shipment of bikes by sending a notification by email to Molde BC, followed by the invoice of £300. Molde BC receives the bike and pays the invoice using its ERP system, which completes its import process. Finally, Molde BC in Norway delivers the bike to the end customer who had paid 4000 NOK.

A student has to handle two issues: 1) the external communication with trading partners, and 2) the internal export and import order management cycles (OMCs). The first issue is addressed in a semi-automated way, using email in our case, while the second issue is addressed using each company's ERP system. The ERP system is a back-end system, while the email system is the front-end system. The human operator (student) connects these systems. The student enters and extracts information to/from the internal ERP system to execute the import/export business transactions internally, while communicating with their external foreign business partners using email. The documents exchanged in the external communication (orders, invoices, etc.) are generated by the ERP system. This approach uses highly automated internal business processes and semi-automated external communication that involves manual operation supported by email. We use semi-automated external communication by email since this is still the most common B2B communication method (see OECD, 2011; Giannakouris & Smihily, 2011; Oracle, 2012). A benefit for educational purposes with semi-automated external communication over a fully automated end-to-end solution is that it offers transparency for detailed data. This exposes details related to data integrity, data quality, information distortion, and information sharing in a supply chain.

Figure 9 shows the external communication for a single company in the global supply chain. The details of the purchase order message illustrate how the contents of the B2B information flow changes when passing an actor in the global supply chain. The messages are received from a customer, stored and processed internally, and sent to a vendor in a store-process-and-forward fashion (i.e., store the item, process it, and forward it on). The quantity ordered, 1, is the only stable information element across the chain. Other elements, such as product identifiers and product prices, change at each company. By handling the messages in this manner, one obtains detailed information on how the content of the global supply chain information flow changes along the chain.

Making Foreign Trade Data Explicit Using a Wizard or Cockpit

When executing the export and import order management cycles using the ERP system, the students uses the SAP Operative Cockpit (SAP Help Portal, 2014). This is a wizard that helps the operator to verify that all required data are correctly maintained before completing the export or import processes. The cockpit points the student to eventual missing data, and provides directions for follow-up actions. As instructors, when setting up the ERP master data, we deliberately omitted some of the foreign trade data. For example, the master data for export must contain information for the mode of transport to border. We deliberately omitted these data. When the students used the cockpit, it reported the mode of transport to border as missing in the "Log of incomplete items". The cockpit directed the students to a follow-up menu to resolve this issue (see details in Appendix A). In this manner, the wizard/cockpit functionality comes in handy for educational purposes. It helps instructors to make that otherwise would disappear in the large amount of data explicit. The cockpit can be used as an instructional tool to expose details providing transparency and visibility for students. As an additional benefit, students get experience in using a wizard/cockpit tool that practitioners increasingly use to handle global trade issues (Amber Road, 2012).

V. REFLECTING OBSERVATIONS BY LOGGING AND DESCRIBING COMMUNICATION WITH PARTNERS

In our implementation of the GSC-Activity, we required students to keep a log of their external communication (emails exchanged) and to answer questions regarding the execution of the internal export and import processes in SAP. Figure 11 shows an example of such a question taken from the export operation. Appendix B shows further examples of documents exchanged.

Display the Document Flow

To view the overall processing status for your **Sales Order** you can use **Document Flow**.
The **Document Flow** can be accessed from most transaction screens in the Sales process.

6.   Click   to display the **Document Flow** for your **Sales Order**.

What is the status of the sales documents
   *Standard Order:*   _____
      Outbound Delivery: _____
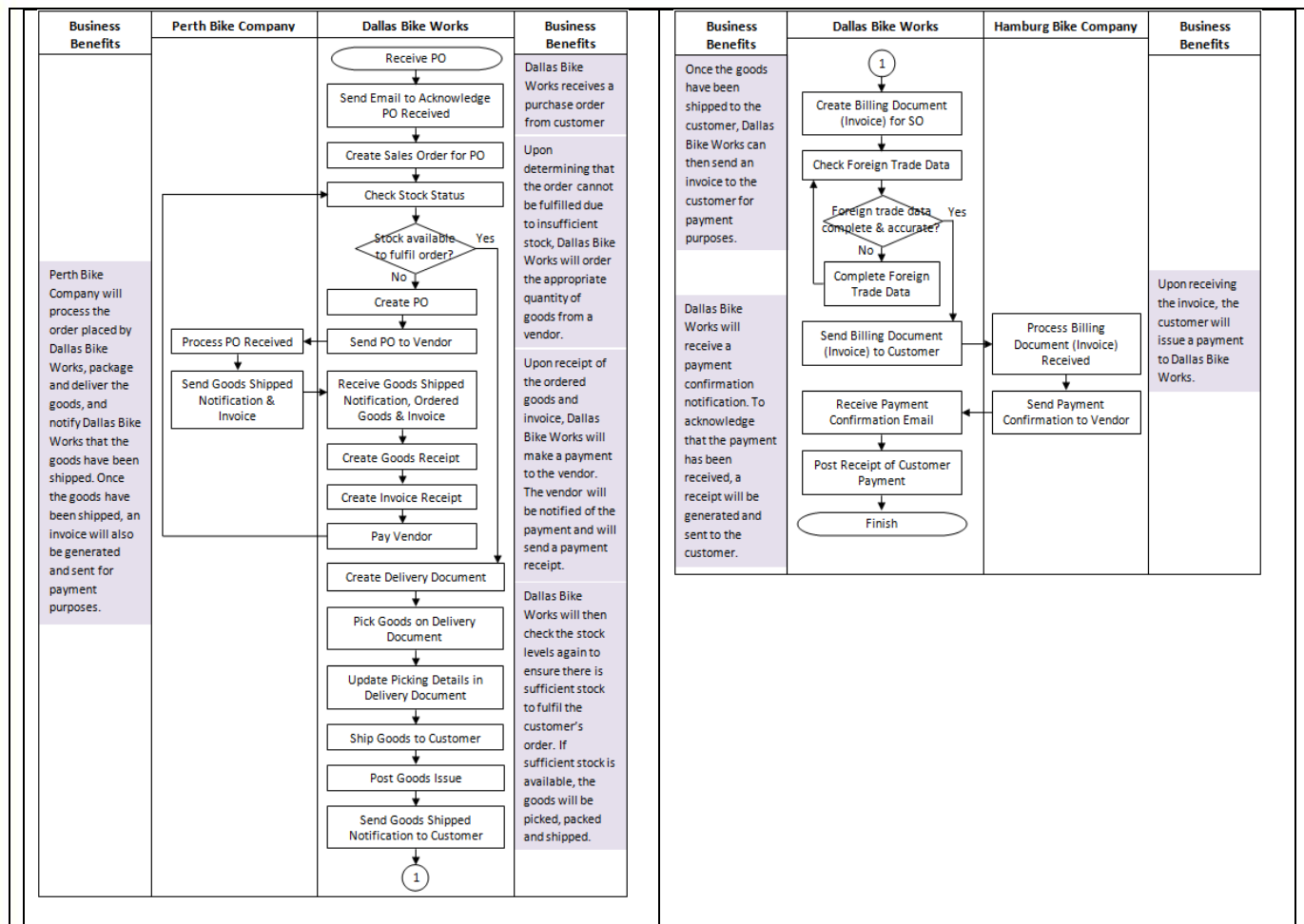   *Picking Request:*   _____

Figure 11. Example of Question to Collect Data on Internal Process Execution

VI. ABSTRACT CONCEPTUALIZATION BY CREATING BUSINESS PROCESS MODELS OF OPERATIONS PERFORMED

Modelling represents a link between theoretical knowledge and operational skills. Students create a model of export and import business processes of the company they run. The specific modeling method to use is up to each of the universities to decide locally. At Molde University College, the lecturer followed the process model style used by SAP University Alliance Program (SAP UAP, 2014). The example in Figure 12 is a modified sales process model explaining the completion of export foreign trade documents by using the SAP Operative Cockpit. For import, the process steps were shown in a similar model.

Figure 12. Export Business Process Model Augmented with Step 15 Complete Foreign Trade Export Documents
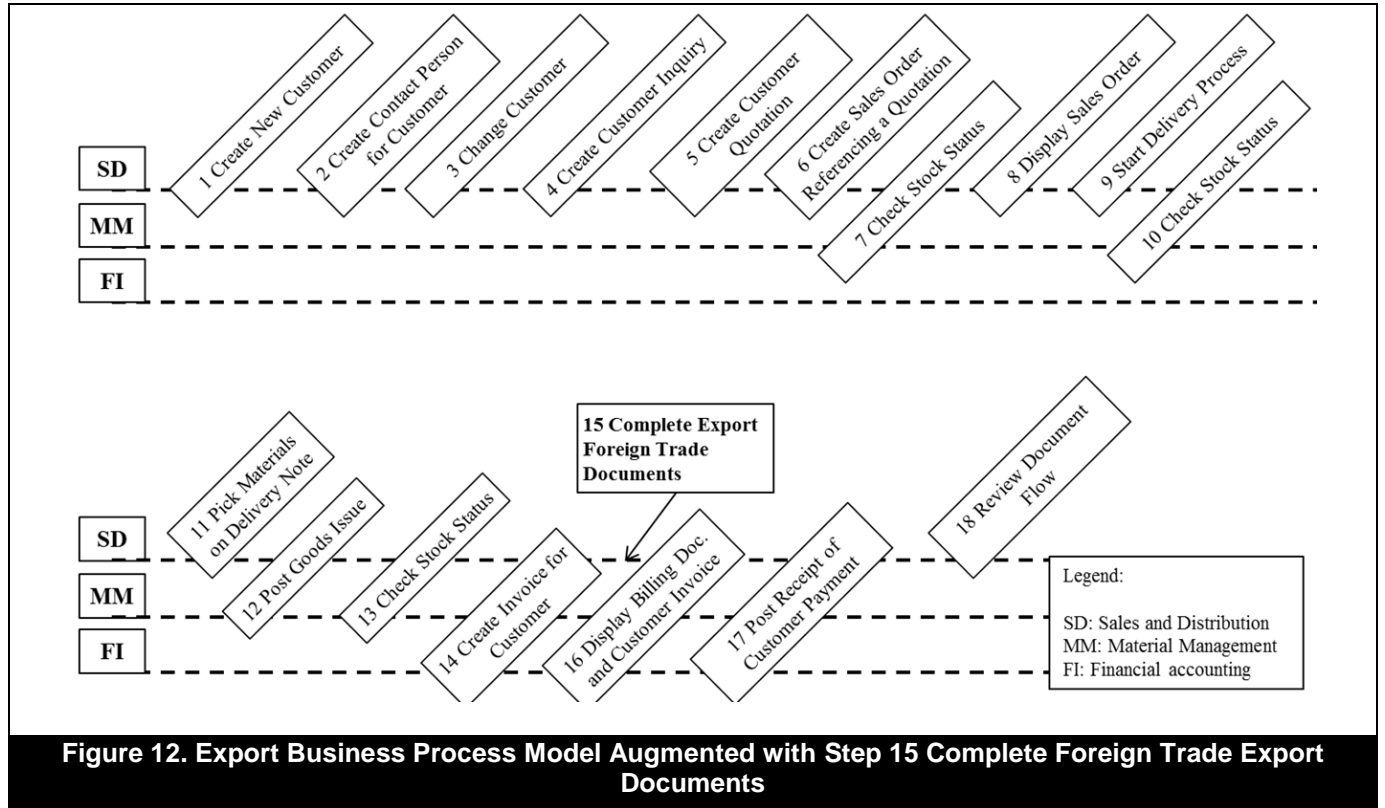
Most students in Molde made a similar model, while others with their own modeling skills made more-complex models by including the integrated nature of the export and import processes when export is temporarily suspended while import is executed. At the Curtin Business School, the lecturer presented a swim-lane modeling style that most students used. Figure 13 shows an example of a business process model made by a student in Australia.

Business Benefits | **Perth Bike Company** | **Dallas Bike Works** | **Business Benefits**

Dallas Bike Works — Receive PO → Send Email to Acknowledge PO Received → Create Sales Order for PO → Check Stock Status → Stock available to fulfil order? (Yes/No)

Perth Bike Company — Process PO Received → Send Goods Shipped Notification & Invoice

Dallas Bike Works — Create PO → Send PO to Vendor → Receive Goods Shipped Notification, Ordered Goods & Invoice → Create Goods Receipt → Create Invoice Receipt → Pay Vendor → Create Delivery Document → Pick Goods on Delivery Document → Update Picking Details in Delivery Document → Ship Goods to Customer → Post Goods Issue → Send Goods Shipped Notification to Customer → (1)

Business Benefits (left): Perth Bike Company will process the order placed by Dallas Bike Works, package and deliver the goods, and notify Dallas Bike Works that the goods have been shipped. Once the goods have been shipped, an invoice will also be generated and sent for payment purposes.

Business Benefits (right): Dallas Bike Works receives a purchase order from customer

Upon determining that the order cannot be fulfilled due to insufficient stock, Dallas Bike Works will order the appropriate quantity of goods from a vendor.

Upon receipt of the ordered goods and invoice, Dallas Bike Works will make a payment to the vendor. The vendor will be notified of the payment and will send a payment receipt.

Dallas Bike Works will then check the stock levels again to ensure there is sufficient stock to fulfil the customer's order. If sufficient stock is available, the goods will be picked, packed and shipped.

Business Benefits | **Dallas Bike Works** | **Hamburg Bike Company** | **Business Benefits**

(1) → Create Billing Document (Invoice) for SO → Check Foreign Trade Data → Foreign trade data complete & accurate? (Yes/No) → Complete Foreign Trade Data → Send Billing Document (Invoice) to Customer

Hamburg Bike Company — Process Billing Document (Invoice) Received → Send Payment Confirmation to Vendor

Dallas Bike Works — Receive Payment Confirmation Email → Post Receipt of Customer Payment → Finish

Business Benefits (left): Once the goods have been shipped to the customer, Dallas Bike Works can then send an invoice to the customer for payment purposes.

Dallas Bike Works will receive a payment confirmation notification. To acknowledge that the payment has been received, a receipt will be generated and sent to the customer.

Business Benefits (right): Upon receiving the invoice, the customer will issue a payment to Dallas Bike Works.

Figure 13. Example of Business Process Model for Export and Import by an Australian Student

Note that, at the business process level, the export/import business processes have the same basic steps as standard domestic sales/procurement business processes. As we discuss above, we used the SAP Operative Cockpit to make students explicitly aware of some foreign trade issues. By handling detailed B2B information flows and the internal order management cycles in the ERP system, students experience the extra information required for foreign trade operations compared with the information required for domestic operations.

VII. ACTIVE EXPERIMENTATION BY CHANGING THE STUDENTS' POSITION IN THE SUPPLY CHAIN

On completing first three stages of the GSC-Activity, the students take the responsibility for another position in the supply chain before they again execute the stages of concrete experience, abstract conceptualization, and reflecting observation. They might be given yet another position before repeating the cycle. In our case, we exposed students to several roles by assigning them the role of head of the logistics department with the responsibility to run both the export and import processes for a company. By doing this, students' obtain a good understanding of the B2B information flow of both the export and import processes and the internal order management cycles in the ERP systems.

VIII. QUESTIONNAIRE

We evaluated gains in perceived student knowledge over several semesters by adapting a questionnaire used by Seethamraju (2007). Seethamraju developed the questionnaire to evaluate a complete course titled "integrated enterprise systems" in a full-fledged program in business information systems. The GSC-Activity matches Seethamraju's overall goal of using real-world business processes when integrating ERP/SAP into a course curriculum. However, the GSC-Activity differs in its focus on international inter-university collaboration, and that it can be incorporated into existing courses. Seethamraju's questionnaire contained seven constructs: business knowledge, process knowledge, implementation knowledge, interface knowledge, management knowledge, SAP transaction skills, and SAP configuration skills. The ones relevant for the GSC-Activity are business knowledge, process knowledge, and SAP transaction skills since our aim is to link students' knowledge of business processes

with operational skills including SAP transactional skills. We left out the remaining constructs in Seethamraju's questionnaire (implementation knowledge, interface knowledge, management knowledge, and SAP configuration skills) since they test issues not in focus of the GSC-Activity. Instead, we added the two new constructs: general background and global business knowledge. We added the general background construct because the GSC-Activity involved students at two universities with different study programs, and because we wanted to see if their perceived general background knowledge differed across the two educational environments. Likewise, we added the global business knowledge section since our global focus is new, and we wanted information on how students perceived it.

This results in the five constructs in Table 1. The two new constructs compared to Seethamraju's (2007) questionnaire are marked with "new". The adapted instrument as shown in Table 2 consists of thirty-two questions broken into these five constructs.

Table 1: Definition of the Knowledge Dimensions
1. **General background (GB)**: Knowledge of general business work experience and knowledge of ERP/SAP systems (new)
2. **Business knowledge (BK)**: Knowledge of the basic business terminology that relate to various functions and cross-functional relationships
3. **Process knowledge (PK)**: Knowledge of various core business processes, their Significance, and their relationship with information systems
4. **SAP transaction skills (STS)**: Basic software skills in creating master data and performing transactions in various SAP application modules
5. **Global business knowledge (GBK)**: Knowledge of multinational/transnational/global business processes (new)

Table 2: Instrument for International Inter-Group Study (Adapted from Seethamraju (2007))
1. General background (GB)

1. Your general business work experience (not necessarily IS/IT work)
     2. Your education in ERP in previous courses or training
     3. Your work experience involving ERP (with SAP or other system)
     4. Your general understanding of how ERP systems work
     5. Your general understanding of the value of ERP systems to businesses
     6. Your knowledge of SAP
     7. Your knowledge of other ERP systems besides SAP
     8. Your ability to use an ERP system (like SAP but not necessarily SAP)

2. Business knowledge (BK)

6. Knowledge of business terminology in manufacturing and execution process (such as MRP production plan, etc.)
     7. Knowledge of business terminology in sales and distribution process (such as sales order, discounts, incoterms, freight, transfer order, goods issue, etc.)
     8. Knowledge of business terminology in financial accounting process (such as general ledger, cost center, journal, adjustment, balance sheets, etc.)
     9. Knowledge of the inter-relationships and inter-dependencies between various functions (such as accounting, marketing, production, etc.)

3. Process knowledge (BK)

1. Knowledge of the concept of business process
     2. Knowledge of business processes and activities in materials management
     3. Knowledge of business processes and activities in sales and distribution management
     4. Knowledge of business processes and activities in financial accounting
     5. Knowledge of business processes and activities in production management
     6. Knowledge of the importance of the integrated nature of business processes

4. SAP transaction skills (STS)

1. Ability to create master data in SAP—materials management module
     2. Ability to create master data in SAP—sales and distribution module
     3. Ability to create master data in SAP—finance/controlling module
     4. Ability to carry out complete transactions in the SAP—materials management cycle
     5. Ability to carry out transactions in the SAP—sales and distribution cycle
     6. Ability to carry out transactions in the SAP – accounts receivable

7. Ability to carry out transactions in the SAP—accounts payable
8. Ability to carry out transactions in the SAP—general ledger module
9. Ability to carry out transactions in the SAP—production planning module

5. Global business knowledge (GBK)
1. Knowledge of how ERP systems facilitate a global business
2. Knowledge of issues associated with a global business
3. Effectiveness of SAP practical's at helping you learn about ERP systems
4. Effectiveness of SAP practical's at helping you learn about global business operations

To allow a finer grade of representation of each response than the traditional five-point Likert scale, all questions used the seven-point Likert scale: 1 (none/very low), 2 (low), 3 (somewhat below average), 4 (average), 5 (somewhat above average), 6 (high), and 7 (very high). We surveyed the students once at the end of each teaching period in 2011, 2012, and in 2013, rather than before and after the teaching period, which Jæger, Rudra, Aitken, Chang, and Helgheim (2010, 2011) did in their pilot study in 2009. In the pilot study, we observed that the Norwegian students reported a decrease in knowledge and skills, an effect that we did not observe when the before and after perceptions were measured once after finishing the activity. The lessons learned from this is in line with Pratt, McGuigan, and Katzev (2000), who found that respondent often overestimate their level of knowledge on a particular subject when using the traditional pre-survey and post-survey. They found that taking part in a program might show participants that they actually knew much less than they originally reported on the pre-survey. For such cases, they reported that pre-survey / post-survey comparisons were misleading because participants used a changed frame of reference to classify themselves after engaging in the program. Our results thus validate the move to a single survey at the end of the course. We asked the students to indicate their before-course values with a "1" and their after-course values with a "2". This led to some confusion for the questions that referred to their general backgrounds, but otherwise made data processing easier. It enabled students to maintain some relativity between their before and after-course responses, which seemed to be lacking in the pilot study.

IX. DISCUSSION

We used the questionnaire over five semesters from 2009 to 2013 to gauge student perceptions of the GSC-Activity. The first one in 2009 was a pilot study as reported in Jæger et al. (2010). Here we report on the four semesters from 2010–2013, and show the average scores pertaining to both pre- and post-course knowledge and skills attributed by the Australian and the Norwegian student cohorts. The total number students participating was 191: 34 in 2010 (16 in Australia and 18 in Norway), 44 in 2011 (22 at each university), 48 in 2012 (24 at each university), and 65 in 2013 (22 in Australia and 43 in Norway). Some students did not answer and some dropped out, which resulted in the numbers reported in Table 3. At each university, a maximum of 25 master students were allowed for the GSC-Activity due to limited lab capacity. However, in 2013, we duplicated the class to make room for more students. Students indicated their perceptions of their before-course knowledge and skills (indicated by entering "1" next to the 7-point Likert scale) and their perceptions of their after-course knowledge and skills (indicated by entering "2"). We made clear, with samples, that the entered values could increase, decrease, or stay the same (by entering the "1" and "2" in the same spots on the Likert scale). We hoped that the students would have a better and more-realistic understanding of their before-course knowledge and skills and the relative changes in these after the course (as opposed to before being exposed to any of the material).

Table 3: Before- and After-Survey Scores Averaged over Four Semesters (2010, 2011, 2012, and 2013)						
	Australia (n = 68: 16 in 2010, 21 in 2011, 22 in 2012, and 9 in 2013)			**Norway** (n = 85: 18 in 2010, 21 in 2011, 22 in 2012, and 24 in 2013)		
Knowledge dimension	Before	After	Gain	Before	After	Gain
1. GB	2,74	4,51	1,76	2,89	4,92	2,03
2. BK	3,31	4,86	1,56	3,95	5,17	1,22
3. PK	3,33	4,97	1,64	3,71	4,99	1,28
4. STS	1,81	4,38	2,57	1,89	4,60	2,71
5. GBK	2,99	4,76	1,77	2,51	4,84	2,33

Both the Australian and the Norwegian students consistently reported a perceived gain in all areas of knowledge of business transactions, processes, SAP skills, and global business knowledge. Further, we can observe that the gains in knowledge in all the above-mentioned knowledge dimensions are quite similar across the countries. In particular, students reported an increase in their SAP transactional skills (STS) and global business knowledge (GBK). The semester schedule and the teaching resources differed somewhat at the two universities. The results

over the semesters were stable, which indicates that perceived learning of knowledge and skills across the five dimensions was very similar and consistent; that is, that is followed similar patterns both for the Norwegian and the Australian students. This study does not provide proof of any actual learning since we had no control group or alternative pedagogical approach to compare to, and since we did not know students' actual knowledge and skills. Yet, the study strongly indicates that students learnt with the GSC-Activity. The study provides a proof of concept of the GSC-Activity that covers our primary purpose in addressing the knowing-doing gap by designing an experiential learning process involving action, reflection, abstraction, and experimentation.

X. REFLECTIONS AND RECOMMENDATIONS

In this section, we reflect on our findings and make recommendations for how to use the GSC-Activity at any university. One issue concerns the mix of business operations and the technology involved. ERP systems are complex and they evolve continuously. One can easily be overwhelmed with technical details. We recommend focusing on the stable elements of the GSC-Activity and letting these elements drive the use of the information system. Both the B2B business processes and the trade documents are stable (Table 4). As an example, the B2B information flow consists of trade documents that follow document standards and regulations that rarely change. For instance, one must specify terms of trade (incoterms) when creating a purchase order. The incoterms change rarely, while how they are specified might vary among ERP systems and versions of ERP systems. When executing the GSC-Activity, a student knowing what to look for (the field to specify incoterms) will find this field with little effort.

Table 4. Stable Elements of the GSC-Activity		
Export business process steps	**Import business process steps**	**Trade documents**
1. Receive purchase order from foreign customer	1. Create and send purchase order to foreign vendor	1. Purchase order
2. Authorize export by creating a sales order	2. Receive a purchase order confirmation	2. Purchase order Confirmation
3. Prepare shipment	3. Receive the goods	3. Goods issue notification
4. Send shipment	4. Receive an Invoice	4. Invoice
5. Send invoice	5. Pay the Invoice	5. Payment notification
6. Receive payment notification		

XI. CONCLUSION

Globalization has created a growing demand for knowledge of business process management in an international context. Academia, governments, and business organizations have expressed concern that university education has not responded adequately to the need for this type of competence, especially regarding how to bridge the knowing-doing gap between theoretical knowledge and practical skills. We addressed this need by creating a new educational activity, the global supply chain activity (GSC-Activity). It follows an order through both export and import management cycles at each company across a global supply chain. This provides students with a unique exposure to the details in an end-to-end order flow through a global supply chain, an exposure that would be practically impossible in a real business environment involving several international companies. Students acquire skills in executing core supply chain activities supported by several ERP systems that connect the supply chain behavior to their theoretical knowledge. Our case study provides a detailed workable example of an implementation of the activity involving students from Australia and Norway. These students reported a significant gain in perceived knowledge and skills related to the operation of global supply chains using ERP systems.

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Editor's Note: The following reference list contains hyperlinks to World Wide Web pages. Readers who have the ability to access the Web directly from their word processor or are reading the paper on the Web, can gain direct access to these linked references. Readers are warned, however, that:
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APPENDIX A: USING THE SAP OPERATIVE COCKPIT

The SAP Operative Cockpit (SAP Cockpit, 2014) is used during export. Its operation is included as a separate step in the business process model (Figure 11) to pinpoint some of the data required for export. In the GSC-Activity, the cockpit is used as illustrated in Exercise SD 9, completing foreign trade documents, in Figure A1. Since we omitted some foreign trade master data during configuration, the cockpit presents a "log of incomplete items", and it provides support for how to resolve the issues.

Exercise SD 9:   Completing Foreign Trade documents

Purpose of Exercise	
To check if all foreign trade data is correct and add the missing data	
Menu Path	Logistics → Sales and Distribution→ Foreign Trade/Customs → General Foreign Trade Processing→ Import/Export →Operative Cockpit→ Individual Maintenance → Export-Actual→ Change
Trans Code	VI14X

In the Screen **Billing Document-Foreign Trade Data: Change**

1. Billing Document: **Your document no**

2. Click on "Log of incomplete items" `Log of Incomplete Items`

3. **In the "Incomplete fields" list on the left hand side:**

    Double click on the first item under "Hdr"

    Expand the FT header `FT header` to look like `Foreign Trade - Header`

    In the **Foreign Trade-Header** sheet

    Select the **Handling** sheet, type the following if not already there:

    ModeOfTmsprt-Border 3 (Road)
    DomestModeOfTransp 3 (Road)

Transport-Departure	Ship	DE	004 Germany
Mns of trsp - border	Ship	NO	028 Norway

    Container: 0 (Goods do not cross the border in a container)

    Enter (observ that one line under Hdr on the left side disappears)

4. Select the **Declare** sheet
    No changes

5. Select the **Geography** sheet
    Office of exit: 4532 (Hamburg Port)
    Export customs off.   4532 (Hamburg Port)
    OfficeOfDestination   0001(NO)

    Enter (observ that one line under Hdr on the left side disappears)

6. Select the **FurtherCustOffices** sheet
    No changes
7. Select the **Comments** sheet
    No changes
8. Select the **Organization** sheet
    No changes
9. Click on the **Set** icon: ✗   `Set`

Now the elemet(s) in the Header is approved. Move to the next item in the Incomplete fields list:

For Trade data-tem 000010

10. Select the **Legal categorization** sheet
    Comm/imp.code.no: **85030010**
    Code no-Destin.ctry   **12345665** (Brest Bike Molde)
    Enter

11. Select the **Origion/Destination/Business** sheet
    Ctry of origion: DE
    Region of origion   02
    Dispatch ctry: DE
    Export procedure   10000
    BusTransactType   11
    Enter
    No more changes in this section, all inclomplete fields should be green.

12. Click on the Set icon: ✗   `Set`

13. Click on "Release ro Accounting   ▶`

14. Click `💾` to save your changes.

    Record the system message:

Message

    NOTE: The red "warning lights" will turn green

Click `↩` to return to SAP main menu then click `🖳`to get the SAP main menu to initial mode. **Enter Yes if prompted to Save.**

Figure A-1. Exercise Using the SAP Operative Cockpit During Export

APPENDIX B: EXAMPLES OF DOCUMENTS AND NOTIFICATIONS EXCHANGED IN EXTERNAL COMMUNICATION

Purchase Order

```
Company                          Purchase  order
Dallas Bike Works
DALLAS TX   75231                PO    number/date
USA                              4500000136 / 03/27/2012
                                 Contact    person/Telephone
                                 Europe




Your  vendor  number  with  us   Your   person   responsible
125088                           tungvt803@gmail.com




Please deliver to:               Delivery date:    Day 04/26/2012
Global Bike Germany GmbH
Trading Goods Hamburg
Großer Grasbrook 17
20457 HAMBURG




Terms of delivery: FOB Free on board
Terms of payment: Payable immediately Due net           Currency USD

Item    Material              Description
    Order qty.            Unit           Price per unit       Net value


00010 GBC006                   Mountain Bike XTR-006
              10 each                 700.00                7,000.00

    Please enter our PO number on the packing list


              Total net value excl. tax USD              7,000.00
```

Figure A-2. Purchase Order from Bonn BC Germany to Dallas BC USA

From:	Nils Jakob Solsvik <nilsjakob@gmail.com>	Sent:	on 28.03.2012 09:46
To:	Jæger Bjørn		
Cc:			
Subject:	Order Confirmation ref: 006		

✉ Message 📄 Order Confirmation Molde Bike Shop.pdf (18 KB)

Hi Bjøm,

Please find attached Order confirmation for your order no: 006
I have not yet received any confirmation of delivery date from my sub supplier. I
will get back to you with that as soon as I have more information.

Best regards
Nils Jakob Solsvik
Sales responsible Mountain Bikes
Hamburg Division

Global Bike Germany GmbH
Groser Grasbrook 17
20457 Hamburg
GERMANY

Figure A-3. Email Containing Purchase Order Confirmation

IDES Holding AG, Postfach 16 05 29, D-60070 Frankfurt M
Company
Molde Bike Shop 006
Britveien 2
N-6402 MOLDE

Order confirmation

Number/Date
87 / 27.03.2012
Reference no./Date
MBC-123-006 /23.03.2012
Cust. no.
25064

We deliver according to the following conditions: Currency EUR
Terms of payment Payable immediately without deduction

Terms of delivery   FOB Origin Shipping Dock

Weights (gross/net) - Volume - Mark
Gross weight   120 KG Net weight   100 KG

Please see our promotional offer enclosed. Delivery as long as stocks
last.

Item	Material	Description						
		Qty		Price	Price unit			Value
000010	GBC006	Mountain Bike XTR-006						
	Customer mat. no. MBC-GBC-MT006							
		10 EA	1.000,00	EUR		1 EA		10.000,00
	GBC006							
	Unconfirmed delivery date							

Items total				10.000,00
Output Tax	0,000		10.000,00	0,00
Final amount				10.000,00

Figure A-4. Purchase Order Confirmation

Invoice

From:	Elena Volikova <elena.volikova@hiMolde.no>		Sent:	fr 20.04.2012 10:15
To:	Bjørn Jæger			
Cc:				
Subject:	Your product PC (GBC004) has been shipped by German Bike Company			

✉ Message   📄 Invoice.pdf (18 KB)

Dear customer,

we are glad to inform you that your order has been shipped to you and you should recieve it soon. An invoice is attached to this letter.

Thank you for choosing German Bike Company! We hope you liked our service and will continue working with us.

Elena Volikova
German Bike Company
Stegelitzer Str. 00
39126 Magdeburg

Figure A-5. Email Containing Invoice from Bonn BC Germany to its Customer Molde BC Norway

Invoice

IDES Holding AG, Postfach 16 05 29, D-60070 Frankfurt/M

Company
Molde Bike Shop 004
Britveien 2
N-6402 MOLDE

Repeat Print

Payment Information

Doc. No./Date	90000097/ 20.04.2012
Delivery Note No./Date	80000099/ 20.04.2012
Order No./Date	64/ 21.03.2012
Reference No./Date	6/ 23.03.2011
Customer	25039
Currency	EUR
Invoice Amount	10.000,00

Conditions

		Weight - Volume	
Payment	Up to 20.04.2012 without deduction	**Gross Weight**	120 KG
		Net Weight	100 KG
Delivery	FOB		
	Origin shipping Dock		

Invoice Details

Item	Material Description Pricing Conditions	Quantity	Price	Price Unit	Value
000010	GBC004	10 EA			
	Mountian Bike XTR-<004>				
	Gross Value		1.000,00 EUR	1 EA	10.000,00
	Output Tax				0,00
	Invoice Amount				**10.000,00**
	Amount Eligible for Cash				**10.000,00**

Figure A-6. The Invoice Generated by the SAP System of Bonn BC Germany

Payment Notification

> **From:** Jæger Bjørn
> **Sent:** Sunday, April 22, 2012 1:09 PM
> **To:** Elena Volikova
> **Subject:** Re: Your product PC (GBC004) has been shipped by German Bike Company
>
> Dear German Bike Company
> I confirm that I have received an invoice for EUR 10000 which we paid 22. April 2012 via our bank. (In real life you will get a message from your bank with a statement of the incoming payment. In this assignment you receive this e-mail as a substitute).
>
> Kind Regards,
>
> Bjorn Jaeger
> Molde Bike Shop
>
>
> On Apr 20, 2012, at 10:14 AM, Elena Volikova wrote:
>
> Dear customer,
>
> we are glad to inform you that your order has been shipped to you and you should recieve it soon. An invoice is attached to this letter.
>
> Thank you for choosing German Bike Company! We hope you liked our service and will continue working with us.
>
> *Elena Volikova*
> *German Bike Company*
> *Stegelitzer Str. 00*
> *39126 Magdeburg*
> <Invoice.pdf>

Figure A-7. Payment Confirmation

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Bjørn Jæger is an Associate Professor with the Faculty of Logistics at Molde University College, Norway. His PhD is in Informatics (2000) from the University of Bergen, Norway. He teaches courses on Information Assurance, Enterprise Systems and Supply Chain Management using SAP, Microsoft Dynamics NAV and GP. He is the leader of the Supply Chain Management and Information Systems research group at Molde University College.

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Ashley Aitken is an entrepreneur and software engineer who owns HEDventures Pty Ltd. Prior to this he was a Senior Lecturer with the School of Information Systems, Curtin Business School at Curtin University in Perth, Australia. He has a PhD in Computer Science and Software Engineering (1998) from the University of New South Wales in Sydney. Ashley has taught first year introductory course in Information Systems, Information Technology

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