Postimplementation Knowledge Transfers to Users and Information Technology Professionals

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ABSTRACT: Although there is substantial research on learning that occurs before adoption of a new information system, there is a dearth of research on postimplementation learning when a new system is assimilated as a routine element of users' work. Hence, during the postimplementation period of a bank's new work flow system, we conducted a longitudinal participant observation study to observe knowledge transfers of users and information technology (IT) professionals assigned to a help desk. We found that although users turned to IT professionals to obtain knowledge related to conceptual understanding and procedures to use the system, they most often turned to other users to obtain knowledge that allowed them to adapt the system to their work. IT professionals, on the other hand, often turned to their colleagues to obtain knowledge that

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helped them modify the system to emerging innovative uses. These patterns of knowledge transfers can be explained based upon source expertise. Our findings indicate that organizations must sustain designated sources of knowledge such as help desks, but must also establish conduits for users to acquire knowledge from other users and develop innovative uses of the system. A substantial amount of critical knowledge transfers relevant to system adaptation occurred during face-to-face discussions between users and IT professionals, and therefore future research should examine how this would be affected by the outsourcing of technical support functions.

KEY WORDS AND PHRASES: IT professionals, knowledge transfers, learning, postimplementation.

UNLESS USE OF A NEW INFORMATION SYSTEM (IS) becomes a routine element of a firm's activities, it cannot provide significant business value. Yet, despite years of research on implementation of IS, we still do not have a good understanding of how employees learn to assimilate a new information technology (IT) as a routine element of their work [1, 24, 25, 39, 46, 59]. Particularly, the assimilation of an IS supporting core business processes, and used by employees of differing work responsibilities, can impose a substantial burden on user learning [2, 6, 10, 20, 24, 57, 59]. Even if employees who use the IS (hereafter referred to as "users") have undergone training, when they engage with the system as part of their routine work they build upon their initial knowledge and typically have to gain knowledge from IT professionals, such as technical support staff (TSS) at the help desk, and from other users [9, 21, 28, 30, 34, 38, 55]. Failure to properly facilitate these knowledge transfers could adversely affect the successful assimilation and use of the new technology [23, 26, 36, 57]. From the many research studies on training, we have a fair degree of understanding of how to train users and impart them with initial knowledge to use the system, but we have far less understanding of how they further acquire and build upon on this knowledge during the deployment and subsequent use of the system [14, 28, 34, 63].

Furthermore, field observations suggest that IT professionals transfer knowledge to users but, in turn, may acquire knowledge from users and from other IT professionals about the organization's business processes and system misalignments [17, 21, 31, 56]. Thus, when users and IT professionals interact during postimplementation, members of each group (the group of users and the group of IT professionals) learn as they exchange knowledge within their group and with members of the other group. Studies indicate that through these interactions, IT professionals may serve as knowledge brokers to user communities [56]. IT professionals surface and challenge user assumptions about business processes, and translate and interpret knowledge as they obtain knowledge from one group of users and transfer it to other users. Hence, it is critical to understand the knowledge transfers to IT professionals from users during system implementation to help us better facilitate their important roles as system support staff members and as knowledge brokers to user communities. But in IS research, studies that examine

knowledge transfers to IT professionals from users typically do so in the context of information requirements determination, not during or after system implementation; therefore, we do not have a good understanding about the knowledge transfers to IT professionals during postimplementation. And there has been no simultaneous investigation of knowledge transfers between and among IT professionals and users while a new IS is being assimilated, and therefore little is known about these knowledge transfers from IT professionals to users and vice versa.

Knowledge transfers between employee groups with differing work responsibilities and expertise are difficult to manage without a good understanding of the nature of knowledge flows [5, 66]. Particularly in the case of IS for which some development activities are being outsourced, understanding these knowledge flows has implications on how to set up channels of communication between IT professionals and users, and among IT professionals. Finally, the study of knowledge transfers begs the question of what types of knowledge are being transferred, and from whom to whom. Therefore, it is critical that we study and conceptualize these knowledge transfers in order to understand and facilitate knowledge flows to users and IT professionals during the assimilation of a new system [24, 39, 59].

We conducted an exploratory five-month observational study of the deployment of a work flow system in a bank and analyzed the interactions between and among users and IT professionals to gain an understanding of knowledge transfers that occur during the postimplementation phase of a new technology.[1] Our findings suggest patterns in these knowledge transfers. We propose a model of knowledge transfers to highlight these differences and discuss its implications.

Research Background

WHEN EMPLOYEES FACE THE TASK OF LEARNING a new IS in their work, they have to acquire conceptual knowledge on the abstract principles underlying the technology, on how to operate the technology, and on how to apply it effectively in their tasks. One way that organizations facilitate these knowledge transfers is through training programs and help desk support facilities. This approach assumes that knowledge to use a system can be abstracted and communicated from organizationally designated sources who can transfer knowledge, such as trainers and IT professionals assigned to the help desk [11, 16]. But there is substantial evidence that users also acquire knowledge from other users. They share their context-sensitive understandings of system usage, improvise upon their existing knowledge, and even develop new ways to integrate technology in their work [16, 52, 55, 62, 65]. If the new IS is geared toward changing existing business routines, users try to understand other users' roles and engage in some level of collective learning in order to have successful outcomes [19, 44]. Therefore, while knowledge transfers to users through designated sources can occur during postimplementation, knowledge transfers can also occur informally among users through social interactions, which play a critical role in how technology properties are adapted to routine work [12, 16, 55]. We need to understand how these knowledge transfers among users contribute to user learning, vis-à-vis knowledge

transfers from designated sources such as help desks and support personnel, in order to provide comprehensive insight to managers on how to manage and facilitate knowledge transfers during postimplementation.

Furthermore, it is learning by users that has received the most attention, even though there is increasing evidence that IT professionals also learn during system support activities [17, 21, 27, 31, 56]. As users use the system, they convey knowledge about misalignments between desired and actual functionality to IT professionals. Users may develop innovative uses of technology that require system modifications. To address these concerns and make corresponding system changes, knowledge must be communicated from users to IT professionals. Through these knowledge transfers, IT professionals may learn details about the business processes of the organization and understand how the new IS enables the execution of these processes. IT professionals may also learn from other IT professionals, because when system modifications are required, they may turn to each other to discuss problems and learn from the experiences of their peers [17, 21, 22, 31]. In fact, recent studies indicate that in certain situations, such as when IT professionals face greater intellectual demands, they turn to their colleagues instead of manuals to obtain the required knowledge [31]. Some studies indicate that when organizations do not facilitate easy face-to-face interactions among their IT professionals, knowledge barriers can be created that hinder the successful accomplishment of their work [21]. Based on the above, there are four possible "paths," or source–recipient combinations, by which users and IT professionals transfer system-related knowledge during the postimplementation period of an IS—from IT professionals to users, from users to users, from users to IT professionals, and from IT professionals to IT professionals.

To date, the nature of these system-related knowledge transfers, and the types of knowledge transferred, have not been investigated, even though these transfers have been identified as critical to the successful assimilation of an IS. In the past, the type of knowledge was typically described in terms of a dichotomous categorization that views knowledge as either a "tacit" or "explicit" type. Explicit knowledge can be articulated and is easily codifiable while tacit knowledge is not as easily codifiable and is rooted in personal action and experiences [3]. More recently, in IS research, this dichotomous categorization has been expanded and refined into finer categories such as know-what, know-how, and know-why, which are more directly relevant to the use of IT [45]. But the paths by which these knowledge types are transferred and the relationship, if any, between a knowledge type and the path by which it is transferred have rarely been empirically examined. Hence, we need to investigate this issue and gain an understanding of patterns of knowledge transfers *between* users and IT professionals (hereafter referred to as "intergroup") and *within* each of these two groups (hereafter referred to as "intragroup") so that we can better manage knowledge transfers during postimplementation.

To address this issue, we need to observe and identify intragroup and intergroup knowledge transfers, and we also need to identify and categorize the types of knowledge.

Research Method and Data Collection

Research Setting

THE RESEARCH SITE WAS A LARGE COMMERCIAL BANK in the United States that had more than $30 billion in assets and more than 3,000 commercial client companies. Bankers of different functional responsibilities had to collaborate with each other to make decisions on whether to approve or reject commercial loan applications. Portfolio managers[2] generated new business leads, negotiated lending deals, and maintained borrower relationships while the group led by account executives had the responsibility to provide high-quality credit analysis. The portfolio manager would receive loan applications from clients and forward them to the account executive. The account executives with a team of credit executives, staff analysts, credit analysts, and sometimes regional staff managers conducted detailed credit analysis and creditworthiness of a client, and developed terms of approved loans. All of this information, including credit analysis, terms of proposed loans, comments, and other assessment details was included in a "loan package." The account executive would submit it to the portfolio manager, who added comments to the credit assessment of the client. Then the account executive and portfolio manager would jointly submit the loan package to a senior credit administrator from the credit administration department, who either approved or rejected the application for a loan. The portfolio managers were motivated to satisfy their clients, while account executives were motivated to conduct excellent credit analysis. Because the exchange of documents occurred mostly manually and the loan approval process took a long time, the bank implemented a work flow application that permitted users to create and share loan process documents online at any time and in any office. The bank implemented a training program and established a help desk support facility staffed by IT professionals, hereafter referred to as technical support staff (TSS). TSS were responsible for training and providing support for users, who brought system-related issues to their attention.

Method

Because we wanted to understand knowledge transfers that occur during postimplementation, we needed to observe employees at work. Therefore, we used participant observation to observe interactions between TSS and users, how they occurred, what knowledge was transferred, and relevant contextual elements [37]. A researcher volunteered to serve as a TSS on the help desk and to record his observations. He assisted other TSS in the initial training of users and was introduced to bank employees as an academic researcher wanting to learn how people use systems. After the initial training period, he responded to the users' requests for help and searched for solutions to system-related problems similarly to the other TSS. Thus, he could observe and record interactions between TSS and users, and other related events, as they unfolded. He worked in close proximity and collaboration with other TSS. TSS included him in all their system-related discussions, and also brought to his attention any reported

system-related issues that he might have missed. He kept a "technical diary," which was a record of his daily interactions and related observations. This was one source of data. In addition, from time to time, TSS called for ad hoc meetings between users and TSS to discuss system-related issues. Whenever there were major system-related issues that had to be resolved, TSS called for these ad hoc meetings, in which the TSS staff and affected users were brought together for discussion. Typically, three to four TSS and a number of users attended the meeting. The recorded minutes from these meetings were made available to us. This was another source of data.

Also, the system records in the work flow system's database were made available. These system records captured as transactions the execution of the business process—that is, the receipt and processing of a loan application. They allowed us to examine the processing of every loan application, from when it was received to how it moved in the process, the actions taken, and the documents including comments by bank employees and other communication with regard to the loan package. Thus, it provided a "paper trail" of a loan application from receipt to resolution. It was an objective record of commercial lending work practices. If a new procedure was instituted in the loan approval process, it was possible to examine the loan applications after the due date and see whether the new procedure was being implemented.

From the technical diary and meeting minutes, two researchers who were not involved in the data collection identified the occurrences of knowledge transfers and coded them using a scheme that we describe below, and the system records were used to verify whether learning activities and consensus decisions were being implemented as new practices. While we wanted to qualitatively examine knowledge transfers to understand and classify the different knowledge types, we also wanted to obtain a frequency count of knowledge transfers to identify any existing patterns. Therefore, we used a multimethod research method [48]. We combined the intensive participant observation method with frequency count analysis [18, 47].

Typology of Knowledge

We needed a scheme to identify the types of knowledge transferred. In the context of IT usage, knowledge represents an understanding of the principles by which a system can be applied and adapted to a business task or process [29]. Three typical types of knowledge include (1) conceptual knowledge of the system functions and which of these are useful to support business tasks ("know-what"), (2) knowledge of the sequence of operations to complete business tasks ("know-how"), and (3) knowledge of why certain functions must be utilized and how these can be adapted to business needs ("know-why") [29, 40, 43, 58, 60]. In the training and learning research literature, know-what and know-how have been described and are referred to as "declarative" and "procedural" knowledge, respectively [69]. Know-what is factual knowledge that describes physical features and relationships between components of a system. Know-how describes the order of operations to apply and when to apply a certain procedure. Know-why has a causal characteristic, describing why certain IT functionality is applied in a context and how to adapt it to new variations [61]. Sometimes called "Type 3" knowledge, it integrates factual knowledge about technology in the busi-

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ness context with social knowledge of the organization, and enables the questioning of reasons and principles underlying work practices [43, 51]. These knowledge types were used to code the knowledge transfers in our data. The coding process involved check coding, definitional refinement, and iteration, until further refinement was no longer beneficial [18, 47]. Our final definitions for coding were:

- *Know-how*—knowledge of the steps to complete a system-related task.
- *Know-what*—knowledge of an aspect or conceptual understanding of the system or system components, or knowledge that a system component is not functioning as intended.
- *Know-why*—knowledge of the business rules incorporated into the system, or adjustments to the system or system usage to facilitate a business-related need, or knowledge that some aspect of the system does not fit a user's business needs.

Identification of Knowledge Transfers

Besides a scheme for knowledge-type coding, we also need a scheme for identifying the path by which knowledge was transferred, whether intergroup or intragroup. We identified sources and recipients of knowledge to identify intergroup versus intragroup knowledge transfers. A user's obtaining knowledge on a system-related procedure from a TSS can be identified as an intergroup knowledge transfer from a TSS to a user. Similarly, a TSS's obtaining knowledge from a user about misalignments of existing system functionality, or about requirements on system modifications to support innovative uses, can be recognized as an intergroup knowledge transfer from user to TSS. The intragroup knowledge transfers that occur among members of a work group may occur in different ways and in different contexts. Situated learning research describes the different ways by which members in a work group may interact with other members of their work group in the context of actual work and learn from one another [11, 16, 42]. For example, knowledge transfer could occur when a member of a work group behaves like an apprentice, and learns from a more senior/experienced member of the work group, or a member shares his or her perspective with another member of the work group such as through narration or storytelling. Members could also collectively discuss perspectives and try to arrive at a consensus view. These knowledge transfers could be coded as instances of intragroup knowledge transfers among members of a group, whether user to user engaged in IT usage practices or TSS to other TSS engaged in support of IT usage. Thus, by noting the source and recipient of knowledge transfers and by identifying their respective work groups, knowledge transfers from TSS and users or vice versa were identified and coded as "intergroup" transfers while knowledge transfers from TSS to TSS or users to users were coded as "intragroup" knowledge transfers. Several examples of how this scheme was applied to analyze knowledge transfers are shown in the Appendix.

Descriptions of Data and the Coding Process

The processing activities for the technical diary and meeting minutes as sources of evidence are depicted in Figure 1. The participant observer collected observational

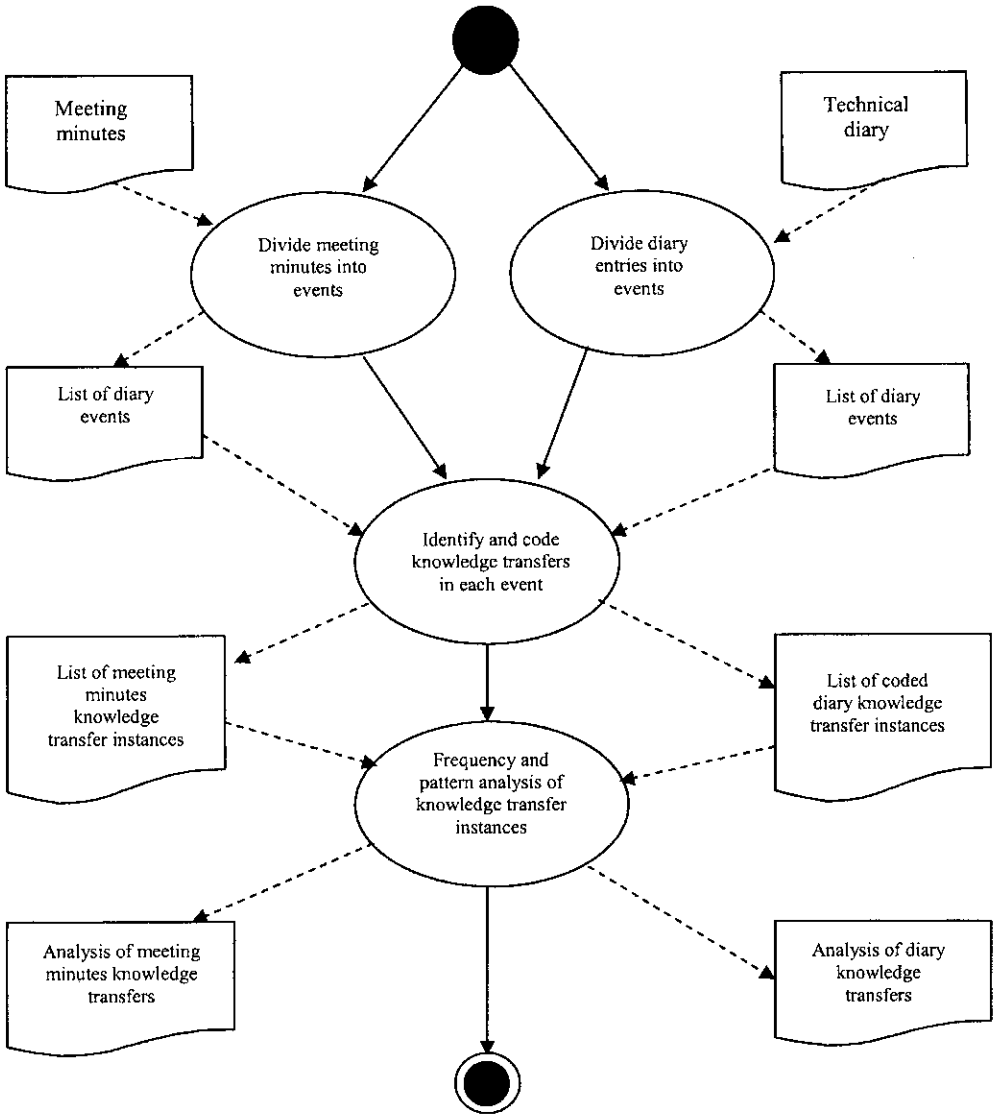

Figure 1. Activity Diagram of Our Study's Evidence-Processing Activities

data over a five-month period. Each request for help from users was recorded as an event in the observer's technical diary. The information recorded included the nature of the problem as reported by the requestor(s), the name(s) of the people involved, the steps taken to resolve the problem (including details of discussions with other users and TSS when necessary), the eventual outcome, and any comments by users/TSS or observations that would contribute to the observer's understanding of the problem. The other TSS brought to the participant observer's attention problems and issues they were dealing with and reported how they were being resolved. The technical diary was organized by day, and by the temporal order of the events within each day. As the process of following up on a reported issue unfolded over the course of a day,

Table 1. Study Participants by Organizational Role

Users	Technical support staff
Account executives ($n = 26$)	Project comanagers ($n = 2$)
Credit analysts ($n = 4$)	Project team members ($n = 5$)
Portfolio managers ($n = 7$)	Other IT staff, including the observer ($n = 4$)
Staff analysts ($n = 10$)	Total number of technical support staff members participating = 11
Credit administrators ($n = 4$)	
Credit executives ($n = 3$)	
Regional staff managers ($n = 6$)	
Market manager ($n = 1$)	
Total number of users participating = 61	

the observer added to the description of the event. Table 1 provides counts of the job roles of observed TSS and users, whose activities were included in the participant observer's data. Meeting minutes[3] were also segmented into events, where typically discussion of a given agenda item was considered to be one event. The meetings were organized by TSS intermittently throughout the observation period, and involved various combinations of users and TSS for purposes such as dissemination of best-usage practices and discussion of problems.

Each event had the possibility of describing one or more possible knowledge transfers. A given event could involve multiple knowledge transfers or multiple types of knowledge being transferred during the process of resolving reported issues. Some events involved no knowledge transfers, and such events were not further analyzed. Our purpose was to identify knowledge transfers and to use the knowledge transfer as the unit of analysis.

The technical diary and meeting minutes were examined for evidence of knowledge transfer. Two researchers not associated with observing and recording data read the meeting minutes and technical diary and independently coded knowledge transfers observed in these data sources. Based on the descriptions provided in the technical diary and meeting minutes, we examined who was involved in the event and what knowledge, if any, was transferred. Each knowledge transfer was coded to identify the knowledge source's work group (TSS or user), the knowledge recipient's work group, and the type of knowledge being transferred. Transfer of administrative information such as scheduling system changes, meeting dates, and the like were not coded [22]. Furthermore, the technical diary was utilized solely to code knowledge transfers from TSS to users. Although the technical diary included participant observations of knowledge transfers among users, these observations probably captured only a fraction of actual knowledge transfers among users, because such transfers can occur without TSS being involved. Hence, the technical diary's account of knowledge transfers from user to user may not be a fair representation of knowledge transfers among users, and therefore counts of these transfers were not included in the analysis. However, knowledge transfers among users recorded in the meeting minutes were analyzed because these captured all the knowledge transfers that occurred during the meeting.

Coding Agreement

After the coding scheme was formalized and no longer evolving, we used a random sample of approximately 10 percent of the knowledge transfers to estimate Cohen's kappa [13] as a measure of intercoder reliability. Kappa to determine agreement on whether or not a knowledge transfer occurred during an event was calculated to be 0.728. We used a different 10 percent of the codes to estimate kappa for knowledge type coding. For the knowledge types, kappa was 0.747. Both kappa measures are "substantial" or satisfactory by the Landis and Koch threshold of 0.600 [41]. Kappa was not calculated to determine reliability of intergroup versus intragroup transfer, because this was objectively determined for each knowledge transfer by identifying the individuals involved in the transfer and their positions within the organization. After the raters' individual codings and reliability calculations, each coding disagreement was discussed by the two coders until agreement was achieved, and the agreed-upon codings were then used for the rest of the analysis.

System Records

Finally, the system data is a copy of the transactional records in the system and at the end of the five-month period; there was information on 1,000 commercial loan packages containing approximately 12,000 documents. Every online document had a log section that tracked its creator, creation time, and history of exchanges and decisions. This log section signified aspects of work practices, including work delegation, division of responsibilities, and document routing patterns. It registered all actions such as creation, status change, and transmission that had been performed on the document. It also kept record of the users who carried out the actions. It thus allowed us to track details on documents pertaining to each loan package, who submitted it, what actions were taken, and when and by whom. When a knowledge transfer was coded and identified, ad hoc browsing of system records before and after the date of the activity was conducted when possible to look for evidence that the participants used the system differently following the knowledge transfer. For example, when users reached a consensus in the meeting that newly developed ad hoc templates would be stored in a "miscellaneous" loan package, one could examine the system records and observe the posting of ad hoc templates to a miscellaneous loan package.

In summary, the meeting minutes and technical diary allowed us to identify knowledge transfer in a variety of contexts, and the transactional records helped confirm our interpretations.

Findings

Qualitative Descriptions of Knowledge Transfers

AS DESCRIBED IN THE SITUATED LEARNING LITERATURE, we found that among users, intragroup knowledge transfers occurred when users interacted with other users of the same

or different job roles. Knowledge transfers occurred when users obtained knowledge from more experienced or senior employees, such as through an apprenticeship type of learning. Users also transferred knowledge through discussions and reached consensus as a group when they met in meeting forums. For example, the system was designed to hold only 28 standard templates. But two users experimented with the system and created new "ad hoc" (nonstandard) templates. As other users observed this practice and started creating and storing these ad hoc templates in the system, managers became concerned that this practice had no oversight and that the templates "polluted the workplace." The system was designed such that templates would always be associated with loan packages and these templates violated this design. Therefore, during the meeting organized by TSS, there was a discussion among users, who agreed to store ad hoc templates in a "miscellaneous" loan package where they could be shared but would not pollute or interfere with regular loan packages. We checked the system records after the consensus was reached and observed that this practice was adopted and that a miscellaneous loan package was created where ad hoc templates were being stored. Therefore, it is seen that these meeting forums facilitated intragroup knowledge transfers of know-why among users and helped them develop a consensus on how to use the system in an innovative manner.

It was intragroup knowledge transfers of know-why that also helped users resolve conflicts arising due to the differing appropriations of the system. For example, the system allowed for the transfer of editing rights (the ability of the user to change parts of the loan package to portray an altered appraisal of the client's financial position) between account executives and portfolio managers, and users were trained to do this. After account executives conducted the appraisal, portfolio managers would review the appraisal, add comments, and turn over the loan package to the credit administrator, who approved/disapproved the client's request for a loan. If account executives transferred editing rights to portfolio managers, they could alter (edit) the appraisals of clients in order to support loan requests from clients, and if the loans went sour, both parties would be held accountable. Hence, some account executives chose not to transfer editing rights while others did. This created conflicts in use because account executives partnered with different portfolio managers on different loans. They desired a standard practice. After discussions, in a meeting organized by TSS, users reached a consensus that editing rights would not be transferred between account executives and portfolio managers. System records confirmed that the transfer of editing rights no longer occurred. Once again, in a meeting, intragroup knowledge transfers among users became the primary mode for users to obtain know-why knowledge, and reach consensus on how they could adapt the system to work.

On the other hand, as shown in Table 2, the majority of intergroup knowledge transfers to users from TSS, many of which occurred outside of meeting forums, were transfers of know-what and know-how, not know-why. These included events in which the TSS explained system functions and taught users various procedures to complete their tasks. There were a few transfers of know-why from TSS to users. We observed that these were events in which the TSS explained business rules incorporated in the system design. For example, in one event, a TSS indicated to a user that

Table 2. Counts of Occurrences from the Technical Diary of Knowledge Transfers to Users

	Know-why	Know-how	Know-what
Intergroup learning	24	135	102

the new system allowed the user to look at others' work and find out who had not attended to the loan package, which was a capability not available before the system was implemented. In a few events such as this, by explaining the new capability of the system and helping users reflect on how the system had changed their work habits, TSS transferred know-why to users.

In many other events, it was users who were providing TSS with know-why knowledge through intergroup knowledge transfers by pointing out that the system did not meet a specific business need, or that it was not functioning as planned. For example, one such event involved an account executive who submitted a loan package to the credit administrator and had it approved. But the account executive changed the terms of the loan and asked the TSS to help him resubmit one particular document from the loan package. Because the system was designed such that only complete loan packages and not individual documents could be submitted, the TSS responded that the changes would be reflected in the document repository, and hence the document need not be resubmitted. But the account executive informed the TSS that, like in manual processes when terms of a loan agreement were changed, the new terms had to be resubmitted and approved. Thus, through intergroup knowledge transfer of know-why from users, TSS were learning that the system had to be designed to record and indicate even small changes to loan agreements. In a separate event, an account executive wanted to know how to submit a document that served solely informational purposes. The system was not designed to accommodate this. In these and other similar cases, TSS were obtaining knowledge about business processes (know-why), the nuances of evaluating and authorizing a loan, making changes in loan documents, legal issues in granting a loan, and specific task complexities faced by individual users.

Other types of knowledge transfers to TSS from users involved users describing technical problems for the TSS to address. For example, there were events that described issues relating to downloaded data from the main database that did not load into the appropriate fields, documents imported from other programs that did not format properly, and banking models projecting a client's financial prospects that did not display all the information. These intergroup knowledge transfers from users to TSS were transfers of know-what. To consult on a solution, sometimes a TSS would, in turn, pass this knowledge and his or her perspective on to other TSS, thus leading to intragroup knowledge transfers of know-what among TSS. For example, when customer profiles were missing because the system was not downloading properly, the TSS discussed and agreed on a temporary procedure. In this particular event, through intragroup transfers, TSS transferred know-what and know-how to other TSS

Table 3. Counts of Occurrences from the Meeting Minutes of Knowledge Transfers to Users

	Know-why	Know-how	Know-what
Intergroup learning	1	14	29
Intragroup learning	22	1	14
Totals	23	15	43

to develop a solution. Thus, intragroup knowledge transfers among TSS were ways by which TSS could resolve system-related issues.

Frequency and Type of Knowledge Transfers to Users

Table 3 shows knowledge transfers to users recorded in the meeting minutes. In these open forums, TSS were seen as a source of know-how (93 percent, or 14 of the 15 know-how transfers to users) and know-what knowledge (67 percent, or 29 of the 43 know-what transfers to users), but not as much of know-why knowledge (4 percent, or one of the 23 know-why transfers to users). Table 2 provides an analysis of knowledge transfers from TSS to users recorded in the technical diary. Similar to the ratios in the meeting minutes, these transfers were more heavily of know-what and know-how than of know-why. Based on these counts, it appears that users perceive TSS as sources of technical knowledge (know-what and know-how) but to a lesser extent as a source of business-oriented know-why knowledge. Based on the separate analysis of knowledge transfers to users from two different data sources, there appears to be a relationship between knowledge type and the path by which knowledge is transferred.

Frequency and Type of Knowledge Transfers to TSS

Table 4 presents an analysis of knowledge transfers to TSS that were recorded at the meeting and Table 5 provides an analysis of knowledge transfers to TSS recorded in the technical diary. From Table 4, it is seen that no know-how transfers to TSS occurred during the meetings. Table 5 shows more transfers of know-why knowledge to TSS through intergroup transfers from users (73 percent, or 46 of the 63 know-why transfers to TSS) than from other TSS. Table 5 also indicates that more transfers of know-what (64 percent, or 43 of the 67 know-what transfers to TSS) and know-how (76 percent, or 16 of the 21 know-how transfers to TSS) to TSS occurred from other TSS, not users. Table 5 further indicates that there were not many transfers of know-how to TSS from users. Know-what transfers to TSS occurred mostly through intragroup learning, similar to the meeting minutes. More know-why transfers to TSS were recorded as occurring through intergroup learning from users, which differs from the observations of know-why transfers recorded in the meeting minutes. As we reexamined the know-why transfers to TSS recorded during meetings, we observed that as a business-related

Table 4. Counts of Occurrences from the Meeting Minutes of Knowledge Transfers to TSS

	Know-why	Know-how	Know-what
Intergroup learning	4	0	2
Intragroup learning	15	0	9
Totals	19	0	11

Notes: Includes the following count of knowledge transfers to the participant observer: intergroup/know-why (2).

Table 5. Counts of Occurrences from the Technical Diary of Knowledge Transfers to TSS

	Know-why	Know-how	Know-what
Intergroup learning	46	5	24
Intragroup learning	17	16	43
Totals	63	21	67

Notes: Includes the following counts of knowledge transfers to the participant observer: intergroup/know-why (44), intergroup/know-what (17), intragroup/know-why (7), intragroup/know-how (14), intragroup/know-what (20).

issue arose, the TSS engaged in discussions and explained the consequences of the problem to one another as they tried to develop a solution and fix the system. Such events occurred during meetings, which may explain the slightly larger number of know-why to TSS from other TSS recorded in the meeting minutes. But as the large number of transfers of know-why to TSS recorded in the technical diary indicates, users seemed to provide TSS with know-why. It appears that TSS obtained know-what and know-how from other TSS, and as per the technical diary, know-why was obtained from users. Based on the two data sources, once again, there appears to be a connection between type of knowledge and the path by which it is transferred. We discuss possible explanations for this in the next section.

Discussion

We conducted this study to understand knowledge transfers that occur among IT professionals and users during the postimplementation period of a new work flow system. We found that IT professionals and users engaged in considerable learning activities during this period as knowledge transferred through four paths—from IT professionals to users, users to users, users to IT professionals, and IT professionals to IT professionals. In addition, we found differences in the types of knowledge transferred through these four paths and differences in learning patterns of users and IT professionals. We observed a connection between knowledge types and the paths by which knowledge is transferred, which could perhaps be explained by perceptions

of source expertise. A summary of our findings and their implications is provided in Table 6 and we discuss these findings below.

Knowledge Transfers to Users

Our study empirically demonstrates that during postimplementation, users learn from IT professionals and also from other users, and that the types of knowledge obtained through each of these sources differ. Intergroup knowledge transfers from IT professionals to users were more of know-what and know-how while intragroup transfers among users were predominantly of know-why. Thus, both sources of knowledge transfer are important during assimilation because they facilitate different types of knowledge communication. In favoring and promoting situated learning by which users learn from other users, some researchers may have inadvertently discounted the role of traditionally designated organizational mechanisms used to impart knowledge to users [11, 42]. Our study findings indicate that IT professionals at the help desk were critical sources for transferring knowledge on the conceptual understandings and procedures relating to system use, and hence, organizational mechanisms such as IT professionals and the help desk facilities are still very relevant to users during postimplementation.

But while designated knowledge transfer mechanisms such as help desks often receive much organizational attention and resources, meetings and other such forums that facilitate knowledge transfers among users also merit organizational attention and support. Our observations indicate that knowledge transfers among users included important know-why knowledge. Know-why is context-specific and strategically critical to an organization because it helps to foster innovations, and coordinate and achieve goals [61]. Our observations indicated that know-why knowledge transfers led to innovative uses of the system. We observed that know-why was useful in deciding on issues such as not to transfer editing rights between bankers, and to develop a new way to store ad hoc loan templates. But unfortunately the organization made no efforts to facilitate or manage this type of learning among users. According to the participant observer notes, IT professionals, not company management, initiated and organized ad hoc meetings of users when there was an important system-related issue to be discussed. These ad hoc meetings evolved into an active forum for users to discuss their perspective on the system, promoting the transfer of know-why knowledge for consensus building on adapting the system and using it in innovative ways. Therefore, based on our findings, we recommend that organizations establish traditional sources of knowledge such as help desks and retain them during the postimplementation phase. The help desk should be staffed by IT professionals trained and competent in the conceptual and technical understandings of the system. But organizations must also promote meetings of users and encourage users of different job roles to discuss system-related issues. We observed that users of different job roles transferred knowledge and discussed innovative uses of the system. Ordinarily, users of different job responsibilities may not get an opportunity to interact because they might not even be proximally located. Therefore, it is all the more important that organizations establish

Table 6. Summary of Findings and Implications

Findings	Implications
Considerable learning takes place during postimplementation as knowledge is exchanged from users to users, from IT professionals to IT professionals, from users to IT professionals, and from IT professionals to users. Users and IT professionals exchange three types of IT knowledge—know-what, know-how, and know-why.	• Managing learning during postimplementation of a new technology must focus on learning both by users and by IT professionals. • Future research must focus on how organizations can facilitate learning by IT professionals. • IT professionals learn and play an important role as mediator of user learning. • Future research must focus on how outsourcing of technical support functions may affect the important mediating role played by IT professionals during postimplementation. • In the context of business process–oriented systems, it is necessary to go beyond declarative/procedural knowledge types and recognize the distinction between know-how, know-why, and know-what in order to recognize and facilitate knowledge transfer.
There are differences in the knowledge transfer patterns of users and IT professionals, and differences in the knowledge transfer patterns in the combination of knowledge type, knowledge source, and the path by which the knowledge is transferred.	• Learning patterns for each group must be examined and managerially facilitated. • Much of the intragroup knowledge transfer occurs through interaction face-to-face—that is, individuals dialoguing with others of different job roles. Mechanisms to increase these interactions might therefore increase knowledge transfer during postimplementation.
Perceived source expertise may explain the connection between knowledge type and the manner in which it is transferred.	• Experts for various types of knowledge must be identified and employees made aware of these knowledge sources. Organizations should consider formal designation of specific individuals as knowledge sources in order to maintain control over the quality of knowledge being transferred. • More research on knowledge-sourcing behaviors during postimplementation must be conducted.

meeting forums and invite users of differing job roles to meet face-to-face and discuss use of the system. Organizations could also establish blackboards/bulletin boards on which users would be encouraged to post information on their experiences and start conversation threads.

Knowledge Transfers to IT Professionals

Through intergroup transfers from users, TSS predominantly obtained business knowledge (know-why) to modify the system functionality and help them adapt the system. TSS gathered knowledge of the loan approval process, such as the number of signatures needed to approve a loan and the conditions under which loans are approved or disapproved. They also obtained knowledge about system bugs and misalignment between system design and actual practice so that they could better align the system with the organization's business processes. For large integrated business software, a considerable amount of customization takes place during postimplementation and our findings suggest that the learning by IT professionals from users is very instrumental to proper customization. Sometimes they obtained knowledge of best or newly developed system use practices from one user and conveyed it to other users. They sometimes moderated the process in a formal way by setting up meetings to discuss new adaptations of the system. As suggested in prior research, our observations reiterate that IT professionals play a very important role not only as knowledge providers but also as knowledge brokers and mediators as they absorbed knowledge and passed it on to other users [56]. They facilitated knowledge transfers of know-why among users, helped in consensus building among users by helping users resolve conflicts in differing adaptations of the systems and were thus critical mediators in knowledge transfers that occurred during postimplementation. As IT professionals learned about the evolution of business processes, they helped users adapt the work flow system.

Unlike the know-why obtained from users, IT professionals obtained most know-what and know-how from other IT professionals. When IT professionals had to make system repairs or changes, our observations indicate that the one source from whom they sought knowledge to help them was other IT professionals. When solutions were found, they communicated it to other IT professionals and engaged in consensus building on the best solution. We observed that the intragroup knowledge transfers to IT professionals also occurred in an informal and an ad hoc manner because the organization had not established mechanisms for doing so. Regular meetings, periodic reports of new records in electronic help desk systems, and presentations by key users to IT professionals are among the mechanisms that could have improved knowledge transfers to them. Thus, our findings add to a growing body of research that calls for organizations to establish mechanisms that promote more interaction and discussion among IT professionals [17, 21, 27, 65].

Differences in Patterns of Knowledge Transfers

We depict a model of knowledge transfers occurring during the postimplementation phase of an IS that shows four paths and the predominant types of knowledge transferred through each path (Figure 2). IT professionals exchange mostly know-what and know-how knowledge among themselves while users turn to other users to acquire know-why. TSS obtain know-why from users while users obtain mostly know-what and know-how from TSS. These patterns seem to indicate support for recent findings

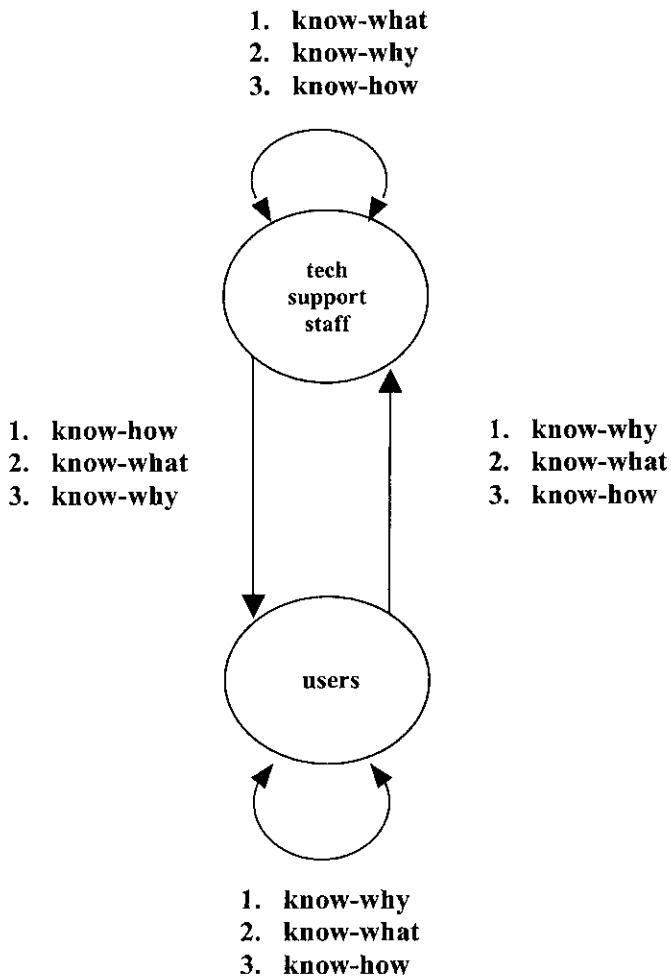

Figure 2. Proposed Model of Postimplementation System-Related Knowledge Transfers
Note: Knowledge types on each path are ordered from most frequently transferred to least frequently transferred.

based on transactive memory systems, which suggest that perceptions of sources of expertise will determine knowledge transfer paths in a work group and organizational context. Wegner [67] was the first to analyze transactive memory as a system by which people used other people as memory aids. People in close relationships assume responsibility for storing some categories of information that fall clearly to him or her, and become aware of the categories of information encoded by the other person and approach them when that information is needed. It is a shared system for encoding, storing, and retrieving information among people such that the transactive memory is greater than each of the individual memories [68]. The concept of transactive memory has been applied to understanding how group members seek knowledge sources and obtain work-related knowledge. It has been observed that transactive memory systems operate within work groups as members seem to know whom to approach for obtaining specific task-related knowledge [35, 49, 50]. Employee perceptions of these

knowledge sources can develop in several ways. The placement of IT professionals at help desks as a designated source of knowledge can be viewed as a signal by which organizations inform users that these are their "go-to" sources for obtaining technical know-how and know-what knowledge. And our findings indicate that a substantial amount of know-what and know-how was transferred from IT professionals to users, suggesting that users perceive IT professionals as organizationally placed sources of expertise in the understanding of technology (know-what) and the procedures to use it (know-how). On the other hand, know-why knowledge describes the adaptation of the system to the business process, and has elements of task knowledge.

When examining the learning activities of IT professionals in a similar vein, we must be aware that to help users adapt the system, they need to obtain a deeper knowledge of how technology supports the users' business tasks (know-why). This explains the primarily know-why flow of knowledge from users to TSS as observed in the technical diary. When TSS conduct modifications requested by the users, the only sources of technical knowledge to whom they can turn are other TSS with whom they discuss and agree upon system changes that need to be made (know-what), and newly intended procedures that need to be set in place (know-how). This may explain why IT professionals often obtained know-what and know-how from other IT professionals. We thus find a connection between the type of knowledge and the path by which it was transferred, and perceptions of source expertise may explain this connection.

Researchers have accepted the dichotomous knowledge categorization of knowledge into tacit and explicit type and that tacit knowledge is harder to transfer while explicit knowledge can be communicated [3, 53, 54, 65]. Know-how similar to procedural knowledge that describes knowledge to use a system/object is considered to be an important component of tacit knowledge hard to explicate and communicate and is generally transferred through socialization among members of a work group [53, 54]. But we found many events in which know-how was transferred to users through designated explicit sources such as IT professionals and explicit knowledge such as know-what was transferred through face-to-face interactions among members of a work group. Therefore, based on our findings, we suggest that the assumption regarding transfer of tacit and explicit knowledge be reexamined in the IS context.

Models to describe knowledge-sourcing (knowledge-seeking) behaviors of individuals have been recently developed [31, 32]. These models suggest that factors such as the learning orientation of individuals and intellectual demands of the job may play a role in the knowledge sources sought by technical staff, and consequently knowledge transfer paths may be influenced by these knowledge-sourcing behaviors rather than the knowledge type. More finely grained taxonomies that distinguish knowledge types such as know-what/know-why/know-how are increasingly being used in the IS context [43]. Our study adds to this emerging body of information by suggesting that individual perceptions of source expertise could play a role in knowledge-sourcing behaviors and consequently influence knowledge transfer paths. From a practice perspective, organizations cannot necessarily preestablish knowledge sources based on traditional categories of knowledge. Instead, organizations must think about the finer types of knowledge relevant to the IS context, the perceived expertise and cred-

ibility of knowledge sources, and the task demands of the job. As this study indicates, organizations may have to establish ongoing and sometimes ad hoc open forums to facilitate knowledge transfers relating to IS use.

Limitations

A principal source of evidence in this study resulted from a participant observer, and thus is subject to particular biases [47]. We feel that research from the "insider's perspective" was invaluable to this study for producing a rich data set with complex observations and is likely inimitable with alternative sources of evidence. Given the steps taken to strengthen validity and reliability, including the objective system data, multiple sources of data, and the observer not being one of the data coders, the effects of these biases on the results should be minimal. However, given the single-organization design of this study, more studies should be done in other contexts in order to facilitate generalization of the findings. The findings that users obtained know-how and know-what from TSS and know-why from other users may seem intuitive but systematic observations and analysis builds credibility to this relationship between knowledge sources and knowledge type and calls for more research on knowledge sourcing to examine this closely. Without question, the participant observer who was placed with the IT professionals could not observe all knowledge transfers among users. The participant observer may have missed a few knowledge transfers among TSS. Because the participant observer was placed in close proximity to the small number of IT professionals, and they reported any discussions and problems related to system issues, it is very likely that he observed most of the interactions of IT professionals. It is also likely that users and IT professionals may have obtained knowledge from user manuals and system documents that were not recorded. However, our data collection was complete in that it was a complete record of what the participant observer learned, saw, and did. For our exploratory study, this is sufficient to identify some patterns and findings that could later be confirmed in a multisite, confirmatory study. What we captured provides us with some insight of understanding the general nature of knowledge transfers during the postimplementation phase between two important work groups.

Contribution and Implications for Research and Practice

Researchers have for some time emphasized that research on understanding the cognitions and learning that occurs during the postimplementation phase of a new IS is urgently needed [1, 36]. We therefore investigated the knowledge transfers of IT professionals and users—two important groups involved in the postimplementation phase—and found that their learning patterns were dissimilar. We also found that transfers through different paths may have different characteristics in terms of the types of knowledge; hence, this exploratory study provides initial information to spur more research on learning during assimilation.

The finding that users acquired a substantial amount of knowledge during assimilation of the system implies that end-user support personnel can take a more active

role in promoting user learning. End-user support personnel can facilitate innovative uses of IT if they can interact with users, understand business processes, and convey new practices to other users. They can facilitate joint meetings between users and TSS as was done in this study and thus play an influential role in user learning and system use. Furthermore, the high level of learning that occurred during assimilation suggests that training need not end with training prior to system implementation but trainers could take an active role during postimplementation and continue to impart knowledge and help users learn [45, 64].

Along with prior studies, our findings show that learning by IT professionals is also important for knowledge dissemination after implementation [17, 21]. Therefore, when helping employees overcome knowledge barriers in the assimilation of new IS, the need for IT professionals to learn must be taken into account. Training programs for IT professionals could help them obtain initial knowledge about the business context and for developing their skills as facilitators and consensus builders [7, 8]. In these training programs, the user group can educate IT professionals about the business process in the organization and thus alleviate their learning burden during the actual deployment of the system. Therefore, an important follow-up research direction should address learning by IT professionals. How can they be prepared and supported in their learning activities? How should training for IT professionals be designed so that they learn to exchange knowledge among themselves and also to moderate consensus building among users?

Our findings and model can be used by researchers and managers to understand why conventional technology support mechanisms such as help desks are not comprehensive solutions for managing IT knowledge transfer, because learning via face-to-face interaction among users is critical to developing innovative uses of the system. Research must therefore examine how user learning from designated sources such as IT professionals and learning from other users can both be facilitated. Research could focus on identifying factors, incentives, and structures that can promote knowledge transfers among users. We focused on knowledge transfers between two important work groups but users may seek knowledge from manuals and repositories. To develop an even deeper understanding of learning that occurs during postimplementation, research has to be extended to include other types of knowledge transfers, such as from manuals and repositories.

The contribution of knowledge transfers that occur informally among members of work groups has been widely promoted and discussed [16, 30, 52]. But there has also been some debate about its relevance in learning [4, 15, 33]. Our research provides evidence that it is an important avenue for user learning but it does not override the role of conventional learning in the context of IS. Our study also showed that, as opposed to knowledge dyads such as tacit/explicit and procedural/declarative, the proposed triad of knowledge types including know-why is more illuminating, particularly given our results showing that the three types are subject to different patterns of transfer.

The overall findings that knowledge transfers between functional groups have different characteristics than those among functional groups also has interesting implications on outsourcing of technical support functions. We found many knowledge transfers

to users and IT professionals that occurred during face-to-face meetings. Users conveyed know-why knowledge to IT professionals. But if IT professionals are located outside national boundaries and in a different cultural setting, how might it affect the learning by IT professionals of the organization's business processes, and how will it affect the ability of IT professionals to fine-tune the system and moderate user learning? Our study indicates that IT professionals play an important role as mediators of knowledge transfers of users and calls for them to be even more involved. In an outsourcing context, knowledge transfer between users and IT professionals will cross interorganizational and possibly international boundaries and IT professionals will be situated in faraway locations. They may not be able to easily mediate knowledge transfers among users and moderate their learning process in meeting forums because of lack of face-to-face interactions. Research has to identify how this might change communication and knowledge transfer patterns and its impact on the assimilation of an IS. Our observational study has thus shown that more research effort must be directed at understanding the interaction between users and IT professionals and the role played by IT professionals during postimplementation because it is critical to managing the assimilation of an IS.

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Notes

1. In this paper, we use *postimplementation* as the general term to describe the use of a new system, and *assimilation* is the term used to refer to the extent to which the system is being used in routine work.

2. Job titles were changed for this paper at the request of the bank.

3. Note that the meeting minutes were internal documents for the meeting group. They contained more details about conversations during meetings than typical distributable minute meetings.

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Appendix. Examples of Knowledge Transfers

GIVEN THAT KNOWLEDGE TRANSFER COULD BE intergroup or intragroup, could involve as many as three knowledge types, and could involve user or TSS recipients, there are many possible combinations of these characteristics for which we could present examples. Our purpose for this section is to give the reader a sense of the variety of knowledge transfer events that we saw. In the interest of space and parsimony, we present a few examples below that *together* encompass the various groups, knowledge types, and recipients. Names of participants have been changed.

Examples of Knowledge Transfers to Users

Intragroup Transfers to Users

The following is an example of transfer of know-why. In this example, a system user (James) learns by working with two other system users that there are multiple status fields that affect the way that he can retrieve documents. It is intragroup because the knowledge is transferred among three users of the same job role as they work together

to solve a problem. It is know-what because James learns that there are multiple status fields that affect his document retrievals, which is a concept that he can apply to system usage in various ways, but is not directly relatable to business rules (which would indicate know-why).

> James wants to put together an AA package. Both packages need FAMAS-based spread in it. [Shala] put in Historical, but the projections are hard to find in both cases. Later, Shala tried that with Marisa. It turns out that FAMAS defaults to customer ID index rather than customer name. They all changed to that, and it was there. James was not clear that the status at doc and package level is different.

In the following example, know-what is transferred by interaction to a user. It is intragroup learning because two users of different job roles discussed the problem to transfer the knowledge. It is know-what because the text demonstrates only that both users know that they have a system-related problem, not how to specifically resolve the problem (know-how), or any business-related reasons why the system might behave the way it does (know-why).

> Desiree told me she got a duplicate client problem. She went through the list to find an existing client profile, but she couldn't. After she created a new one, found out two records on the same client. She reports that Vera had the same problem and talked to her.

The following is an example of transfer of know-why and users reach a consensus on editing procedures. It is intragroup because the knowledge was transferred via discussion among users of different job roles. It is know-why because the users are agreeing about a usage-related problem and that they need to adjust the way they use the system in order to better serve their work needs.

> Drew and Jorge needed help while I was working with Steve. Drew tried to print out CLAF while in editing mode. It didn't work. We change to the view mode, it works. It is a pain for Sam, Jorge, and Drew to have to switch between editing and view mode. It takes about five minutes turnaround time to do that. And sometimes, it is just a little thing one needs to change right after save and exited from the Editing mode. All of them agree that a good habit needs to be formed over time to make CLAF editing a one pass operation.

Intergroup Transfers to Users

The following is an example of transfer of both know-how and know-what from a TSS to a user. It is intergroup because the TSS (the narrator), as opposed to another user, transfers the knowledge to the user. The know-how gained is of what steps are necessary to print correctly. The know-what gained by the user is that there are two systems, each with its own settings, and that adjustments made in one system do not imply that similar adjustments are made in the other.

> Zelda called from OC about FAMAS. She said she used legal landscape to print four periods into RACER [the workflow system], and it didn't hold everything. I suspect that she did not set up FAMAS right, and walked her through the process of setting up FAMAS printer right. When we finished, it was right. Seems a case of confusion of setting up paper size and orientations in two different applications. Need to do it in both.

Examples of Knowledge Transfers to TSS

Intragroup Transfers to TSS

In the following example, know-what is transferred by interaction to an IT staffer. It is intragroup learning because it is transferred from one TSS (the narrator) to another (Brenda). It is know-what because Brenda learns about the nature of a printing problem—that is, that it is not caused by the RACER system, instead of learning step-by-step how to fix it (which would be know-how) or how it relates to business rules/needs (which would be know-why).

> I told Brenda that the day before's duplex printing by Gail was not a RACER problem but either a Windows or printer problem. She was relieved. "Oh, I'm so happy that it is not a RACER problem."

In the following example, know-what and know-how are transferred to TSS. It is intragroup because it is transferred among TSS. It is know-what and know-how because an understanding of a functionality problem, and the step necessary to resolve it, is gained, not how to adapt the system to the business.

> [In a discussion among TSS, they determine that] . . . the deletion of docs and profiles are more involved than just deciding what to keep and what to get rid of, because some of the replication conflict may not have a doc ID. So they decide a check has to be done before that point of deleting.

Intergroup Transfers to TSS

In the following example, know-why is transferred from a user to a TSS. It is intergroup because it is transferred from a user (Earl) to a TSS (Brenda). It is know-why because Brenda learns that a user has tried to change the ways he uses the system in order to accommodate his work needs.

> Earl has a deal that the BOT total and the gross total are different on the CLAF. He tried to put a negative number in the BOT total field to compensate for these differences. He got excited last Thursday, and told me that. I asked him to let me know the result. This morning, he put a note on my table to tell me that it worked. I went to his cubicle and talked to him. He was a bit upset. He talked to Brenda about the innovation; Brenda thought people may get confused about the negative number. He explained that it was a good idea.

Other Examples of Each Knowledge Type

The following are examples of the types of knowledge that were transferred.

Know-What Transferred to Users

- The difference between being in an edit mode versus being in a view mode.
- The relationship between packages and documents, and how the system deals with these.
- The role of the document hierarchy imposed in the system design.
- Differences between a stand-alone and client–server application.
- The way the word processing application is set up to interface with the work flow system.

Know-How Transferred to Users

- How to insert a document created in a different application into the work flow system.
- How to attach a document to a loan package.
- How to enter a financial spread in the work flow system and work on it.
- How to create an administrative action form.
- How to open and fill a template available in the system.

Know-Why Transferred to Users

- The fact that the system allows one user to see another's work.
- The agreed-upon "clean-cut point" to start the process of adding client information.
- Explanation that the requested amount and loan amount must be shown in the loan summary.
- The need for forms that have had changes to be reapproved.

Know-What Transferred to TSS

- When forms are created in other applications and then are dropped into the work flow system, the display is completely messed up.
- Bank logos do not display properly on every page.
- The date when credit write-ups were updated do not show correctly in the user's view.
- Users are not able to save the credit agreement form.
- Boldface fonts do not print.

Know-How Transferred to TSS

- Users are not able to override the rate on the credit form and therefore let the comment field be used temporarily to indicate this change.
- To log a signature, drop another form in the package.

Know-Why Transferred to TSS

- Loan packages need to be in a specific format to meet business and legal requirements.
- A user wants the system to handle multiple loan types for one borrower/request and needs a loan agreement form to handle this.
- Users find it important to put a date in the borrower profile which indicates the time/date since this client was a prospect.
- Users want to link borrowers with different loan packages, so that relationships between these packages can be indicated to account executives and credit administrators.
- User wants to create credit agreement forms for a borrower who is listed on two loans, one as a single entity and another as a joint entity.
- User finds it important to put three guarantors on a form though it does not have such a provision.
- User feels it is important that, on certain occasions, they should be able to send a loan package to two credit administrators at the same time. System set up to send to only one credit administrator.