Essence of Technical Writing: Communication between Non-Experts and Experts in a Constrained Genre

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Introduction

As someone who has always identified as an engineer, I periodically find it hard to effectively communicate my technical thoughts and ideas to others. In my research, I investigated how technological concepts are communicated between people of varying knowledge and specialties, between non-experts and experts for a given topic. Technical communication is used all around the world, much of which remains unnoticed. There is specific jargon utilized by countless individuals in countless disciplines, making it very difficult to describe something in a universal sense in such a way that everyone understands.

This paper is not about technical writing in a traditional sense; rather, it is about describing technical aspects in terms the average layperson understands. Engineers, for one, are accustomed to creating long, vivid, and complex descriptions of their observations. But can these descriptions come from the common man, someone without their specialty? According to Atul Mathur, a professional engineer and technical copywriter in Singapore, "The greatest issue is the inability to see simplicity in complexity," or more simply how to translate it using shared ideas (Crawford).

The notion of technical communication between non-experts and experts is inescapable in today's modern workplace. It is a crucial skill for all members of the workforce, workers and CEOs alike. Without efficient communication, there are reduced levels of interaction and productivity leading to reduced profits. Employees each have their own specialties, specialties that must be portrayed by passing knowledge to coworkers, providing support to clients, documenting products, and even giving presentations or pitches to management. Each of these methods share a common link, communication between an expert and non-expert(s).

Initially, one must understand the traditional accepted method of technical communication between non-experts and experts. According to Row, the process can be split up into the following four steps.

Clarity of Purpose. To begin communicating one must first decide what is going to be discussed. One needs to determine what information needs to be portrayed and why. One may be communicating to inform or to seek action. Ultimately, one needs to know what the purpose of what they are talking about is and the end goal; Row defines this as clarity of purpose. The purpose and goal needs to be portrayed to all parties to have successful communication. One must also conclude on method to communicate, such as audibly, visually or textually. Traditionally, technical theory is relayed through textual methods and for this reason it is the focus of my research.

Customer's Context. Secondly, one must establish context for what they are going to try to portray, "context is crucial in making sense of language use" (Dombrowski 258). Being able to provide context is much like the idea of "picture is worth a thousand words," adding context provides meaning to the words chosen. Dombrowski refers to context in the realm of the conversation and its own merits, meaning the environment where the conversation is happening and the potential controversial nature of the topic. Row takes a different stance. She defines customer context as understanding the audience and their needs. This means considering who one is talking with, their habits, and the purpose of the conversation.

Concise Content. Next, one must formulate the message. Especially when working with non-experts, many people who are not specialized in technical theory: "technical information needs to be made clear and comprehensible [and put] in everyday terms as much as possible" (Dombrowski 257). Although this is the simplest and rather foolproof approach, it is not the only way, as non-experts are able to use "transmuted expertise" to gauge the validity of an expert and come to a conclusion based on the expert's claims (Collins and Weinel). Transmuted expertise is the phenomenon where non-experts are essentially able to accept what the expert said and take their word for it.

Communicate With. Finally, one must be a listener as well as a communicator. This method is more of a mindset, because it means to communicate *with* one's audience as opposed to communicating *to* them. This stresses the importance of communication being a two way street. One has to be mindful of the reception of what they are saying and how others are receiving it.

The Four C's. Holistically, these four methods comprise what Row calls the four C's: clarity of purpose, customer's context, concise content, and communicate with. These four C's generally ensure effective communication between non-experts and experts.

I primarily examined the communication starting from the non-expert and leading to the expert. This gives a different side of the story, showing how everything is up to interpretation.

Along with the four C's, one must establish communication and maintain it until the purpose/goal is achieved. Traditionally speaking, this is done through emails, and has been the go-to solution for communication between two parties for years. When teams and large groups attempt to communicate through email, efficiency and practicality quickly diminishes (Gopsill, et al). This is because of the organizational limitation emails impose on both parties: when a large influx of emails comes in, it is relatively easy for one to get lost and neglected. Gopsill, et al. propose a new method, the social media approach, where all communication is essentially considered public. Instead of messages traveling between individuals, messages go to a central party where everyone can access them. This way others can view past information and join in on the ongoing conversation. The result is a portal where information and messages are never missed or unanswered and information is not lost.

There has been a vast amount of research into how technical theory is communicated between non-experts and experts. However, all of the research above is coming from the expert side to the non-expert side, meaning that the expert is the one initiating the communication and the

non-expert is along for the experience. In my own research, I primarily examined the communication starting from the non-expert and leading to the expert. This gives a different side of the story, showing how everything is up to interpretation.

Introduction to Community

The purpose of this study is to understand the methods used by experts and non-experts in portraying technical information to accomplish a shared goal between them. To achieve this, I observed one particular activity system: a public high school. This school system uses an explicit genre of help desk forms between the teachers and the technical support staff in order to maintain all the technology efficiently. I specifically analyzed the communication used in these forms to accomplish this goal.

This high school communication group fulfills the definition of a discourse community set by Swales, as groups with "a broadly agreed upon set of common public goals" that use communication to achieve those goals (220). These help desk forms perfectly meet the definition of a genre, which is a "patterned, typical, and therefore intelligible" form of writing used to get work done (Bazerman 368). Although genres are usually fixed, variances do occur. I focused on these forms and the divergences (both in individual style and means that seem to potentially "break" the genre) from the strict genre made by the teachers in this community.

I analyzed the bidirectional transfer of technical ideas through common and advanced language in the help desk forms. For instance, a broken laptop. A non-expert might possibly stop right there or potentially provide further reiterations, such as "computer does not power up," "battery bad," etc., while an engineer/expert may specifically narrow down the problem to a broken power switch. Both of these descriptions are completely viable, yet each is preferable in a given situation. I analyzed the genres and methods used to express these concepts to different audiences.

The school I analyzed can be described as an activity system, which is a "group of people who share a common object and motive over time, as well as the wide range of tools they use to act on that object and realize that motive" (Kain and Wardle 275). For this system, I primarily focused on the interaction between the system administrator and staff. The staff is responsible for teaching students and reporting computer system issues/requests to the system administrator. It is the system administrator's job to execute and carry out these requests so the teachers can teach effectively using technology.

The community of the high school consists of over twenty-four hundred students, a few hundred staff, sixteen hundred computers and one sole system administrator. This community is constantly using computers for instruction, upgrading and installing software and repairing computers as they break. Given the size of the campus and its 1600+ computers, the system administrators (sysadmins) needed a tool to manage all this technology. They decided to use a management software called Dell KACE. As well as managing the technology, KACE allows teachers to submit "tickets" These work orders are then prioritized and organized for the sysadmin to complete. I will go into further detail about KACE below.

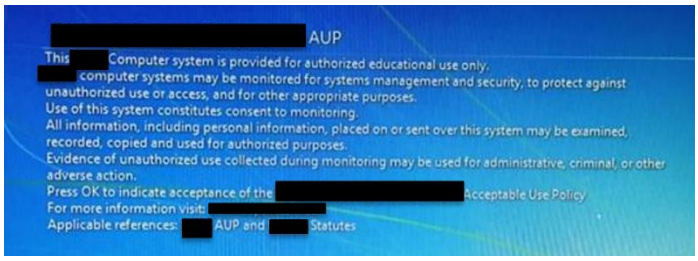

Figure 1: A screenshot of the authorized use policy, or AUP.

The rules are posted for everybody when they go to log into a computer in the form of an AUP, an authorized use policy. There are also some rules that I have yet to determine whether they are official or simply part of the discourse conventions of the community (Wardle), such as, for example, using KACE over email/phone to reach the sysadmin. The division of labor is split into two separate groups, users and the administrators. The users are split into teachers and students, and only teachers have access to the work order system KACE. The administrators execute the work orders and maintain the systems. The objective of the intercommunication between teachers and sysadmins is to keep the computers in good shape and effectively empowering the teachers. The end outcome of computer upkeep is easier use and more effective teaching.

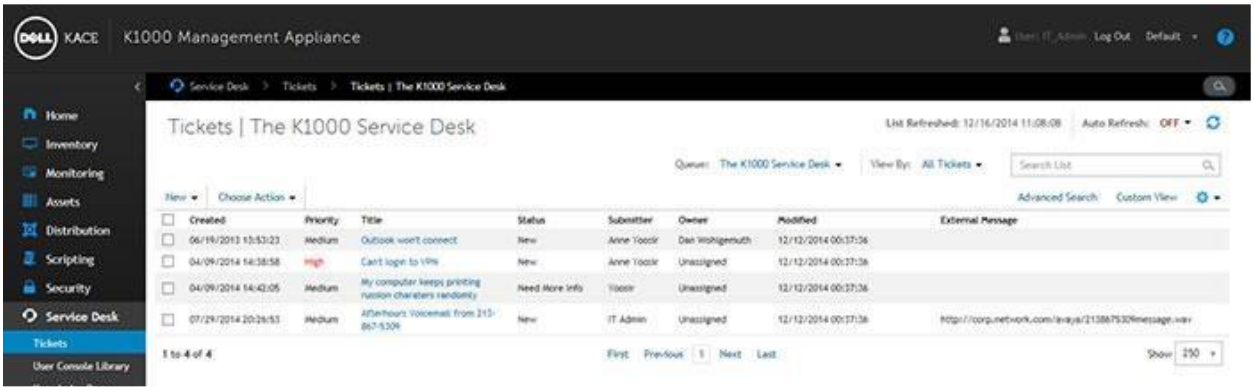

Figure 2: A view of KACE K1000 web portal

KACE Overview

In fact, not only does this individual school use KACE, but the entire school district utilizes this software suite distributed by Dell and aptly named Dell KACE. KACE does not stand for anything specific, but is merely the name of the software. This software suite specializes in computer systems management. This entails software licensing and distribution, operating system deployment, hardware inventory, and service desk capabilities. Essentially, KACE is everything one could possibly need to manage thousands of computers in a business environment. Currently this system manages over thirty thousand devices in this school district, servicing sixty-six thousand students and eight thousand employees.

I focused on the service desk component of the KACE system. This service desk allows teachers to submit what are called tickets into KACE. Tickets allow teachers to document problems and requests for their school system administrator. The system administrator, or sysadmin for short, is known by several names such as: IT guy, tech guy, and "the guy who fixes things."

This service desk has two important objectives. The first objective, with a primary focus on the short term, is getting equipment up and running again for the users. Its secondary objective is less apparent: data collection. One of the more important aspects of KACE is that it functions as a full inventory software solution. It tracks all of the equipment connected to the network: which equipment is operational, as well as what software (ie., programs and updates) is installed. KACE is able to gather this and other important data such as troublesome hardware directly from the users. The information provided in the tickets is all analyzed and categorized. This analysis provides insight into performance, arming administrators with the information they need to make educated decisions when purchasing new products. For example, if there are an increased amount of tickets being created pertaining to a certain projector, the organization would be compelled to purchase another brand instead. These educated decisions make up a great deal of IT related purchases every update cycle, approximately every four years.

These KACE tickets are extremely structured and have become a genre within this school activity system. In total, there are nineteen fields, but only eight of those must be filled before one can submit a KACE ticket (Figure 2). The fields I focused on were the following: `Brief Description`, `Who's Affected`, `With What`, `Type of Assistance`, `Resolution`, and `Comment`. I chose these specific fields because they provide the most technical information involved with the ticket. The values and language used in these fields give insight on how a non-expert teacher portrays information to the technical expert sysadmin. The remaining thirteen fields are simple data fields for locations, times, phone numbers, and so forth. These fields don't provide any information about the genre and are mostly static throughout the thirty-four tickets I analyzed.

When creating a KACE statement, one has to fill out a `Brief Description` in the form of a single line text box. This medium was chosen intentionally to indirectly limit the length of the description. Because the text is limited to one line, it makes it inconvenient to type out paragraphs and long sentences. As the user types, the field will simply get longer in the horizontal direction; after roughly ten words it extends past the end of the page and the user is forced to scroll to continue typing. This encourages the user to keep their descriptions short and to the point. Continuing with the broken laptop analogy from above, an appropriate `Brief Description` would be "Laptop 2-17 not powering on" (Figure 4).

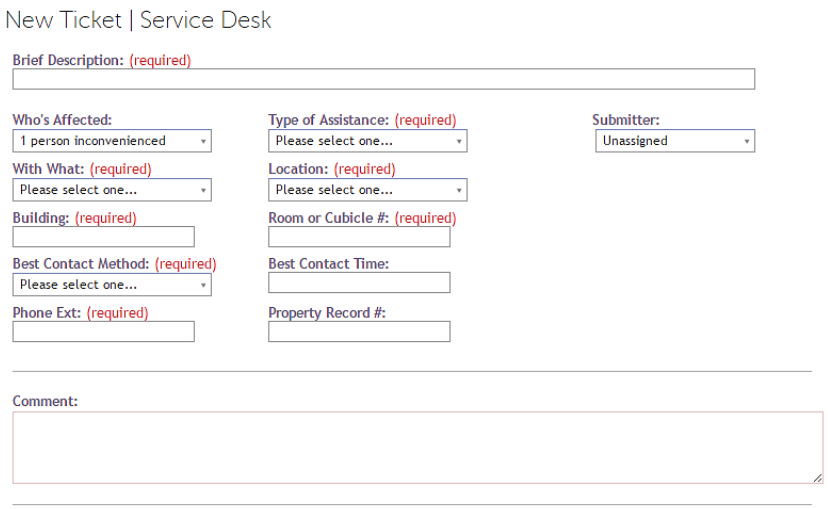

Figure 3: A screenshot of an empty KACE ticket.

The `Comment` field is much like the `Brief Description` field in that it is designed to provide details for the issue. Yet, there are several major differences. For one, its length is not limited and allows users to provide as much information as they see fit. Secondly, it is open to both the sysadmin and the teachers, facilitating bidirectional communication between parties. The communication allows for additional information to be shared about the issue. Examples include progress updates and tips on how to best avoid the issue in the future. An appropriate `Comment` would be, "I tried plugging laptop into charger and still would not turn on. Laptop is number seventeen on cart two" (Figure 4).

The `Who's Affected`, `With What`, `Type of Assistance`, and `Resolution` fields are in the form of a content-assisted drop down box. This means that there is a predetermined set of choices available to be chosen by the user. This is notable for the `With What` field because there are hundreds of options and the content assist allows the user to search for the closest fitting tag. For example, if a teacher types "light" several keys would show up, relating to projector bulbs to desk lights (Figure 4).

Laptop Analogy Example			
`Brief Description`	"Laptop 2-17 not powering on."		
`Comment`	"I tried plugging laptop into charger and still would not turn on. Laptop is number seventeen on cart two."		
`Who's Affected`	`With What`	`Type of Assistance`	`Resolution`
"1 person cannot work"	"Hardware::Dell Laptop::Not Operational"	"Problem"	"Replaced power button"

Figure 4: Sample acceptable data for laptop analogy.

Methods

In this data analysis, I focused on the shared genre of KACE reports from three teachers of a local high school. I used textual analysis to categorize and analyze the reports according to several factors including: word count, the types of keys used, punctuation and topic. The three participants I chose teach and work in different areas of the school, but can be separated into two major categories: Technical and Non-Technical. The first two subjects, Lisa and Ethan both teach classes

solely involving computers, and were therefore placed in the Technical category. In these classes, all thirty students have a computer dedicated to them throughout the period. While the other subject, Christina, belongs in the Non-Technical category. Christina teaches a class in a traditional classroom setting with desks and a projector. Although there are ten computers in the back of the room, they are not used on a day-to-day basis.

I have collected as many KACE tickets/statements as possible from November 2015 to the present, November 2016, totaling thirty-four tickets.

Lisa

Views. Lisa is a technical education teacher at the high school, where she teaches a Microsoft Office course (focused on demonstrating Word, Excel and PowerPoint), two levels of software programming, and an early childhood education course. One could describe Lisa as "with it" in terms of computer hardware; she understands the basics of how and where to plug power and USB cables into the computers. Because of this, she has no fear of attempting to self-diagnose the hardware when problems arise. Although she is fairly experienced, it would probably be inaccurate to call her a computer hardware or software expert.

Before I analyzed her KACE statements, I wanted to understand what she believed its purpose was. Initially when the KACE system was implemented, it was simply dictated down to the staff with no further information. Because of this, she felt intimidated by it, believing it was to gather data on the teachers and their technical needs rather than to help. Lisa was able to describe how KACE was imposed upon the staff. She said they were simply instructed not to call or email the sysadmin and to create KACE tickets. If they were in some computer emergency, they should fill out a KACE report while on the phone before help arrives. These instructions stress the convention of allowing the KACE system to prioritize and organize tickets for the sysadmin. When asked about how she felt about KACE now, she understands one of its core purposes, saying, "It's a tool for efficiency." When asked to elaborate, she continued on to say it has a "quicker follow-through" as opposed to the old email-based system.

Statements. In total, Lisa has submitted sixteen unique KACE statements over the past year. Most of her issues pertained to connectivity, ink/toner for the printer, and software issues (see Figure 5 below). In particular, her word count was on average 178% longer for her descriptions and 121% longer for her comments compared to the two other subjects. These descriptions average seventeen words, and are all quite detailed in stating what the issue is. Her comments average forty words, and provide the background and remaining details to the issue without much extra information. Because her descriptions are rather long, she does not need to comment on every statement, with only 69% of her statements including comments.

On her statements, the field, `Type of Assistance`, was always listed as a problem. Another pattern found in her statements is the overwhelming usage of the `Many people inconvenienced` tag for `Who's Affected` at 69% and the `No access` tag at 81% for the `With What` field.

On average, Lisa used over five characters of punctuation per statement. Throughout her statements, she typed twenty-eight commas and fifty-five periods. Lisa used 302% more punctuation marks than the two other subjects. Unlike the other two subjects, Lisa partially took advantage of the feedback section. If and when she provided feedback, they were five out of five stars; in total, she provided feedback for eight statements.

Ethan

Views. Ethan is another a technical education teacher at the high school, where he teaches the same Microsoft Office course as Lisa as a well as an Introduction to Digital Design course. Ethan is not as experienced with technology as Lisa, but he still understands the basics. Ethan is less likely to try and diagnose computer issues as it is not his job, and it is easier to simply move a student to a different computer should a problem arise. He mainly works with freshman and sophomore high school students, which is evident in how he handles his classroom. He is sterner and runs his room in a more controlled manner compared to Lisa's classroom. Ethan is not the type to add on unnecessary information and have long drawn out conversations; in person he is quick and to the point.

Ethan's attitude towards KACE is simpler. He sees it directly as a tool, and the correct tool at that. Although KACE was imposed on him by the school system, he has fully adopted it without giving it a second thought. For him, the KACE system is quicker and easier to fill out as opposed to emailing and calling, allowing him to get back to his job faster.

Statements. Ethan's to the point nature shows in his twelve KACE statements. His descriptions average five words with a maximum of eight. These descriptions are simply the issue at hand, with little to no context provided at all. Because his descriptions are so short, he relies completely on the comments to provide the background information and context needed to fix the issue. For this reason, his personal comments are slightly longer, averaging nineteen words. His ratio of description to comments is 1:1, meaning he has comments on every statement.

Throughout Ethan's statements, punctuation marks were sparse; in total, he utilized a mere thirteen periods. This averages to just over one per statement, but in reality, they were spread over seven statements which averages closer to two.

Ethan correctly used the `Type of Assistance` field. His responses varied between problem and request based on the ticket. For example, ticket 91351, stated he "need[s] ink for color printer" with the ink type in the `Comment` section. This ticket was marked as a request because it is not an actual problem with the hardware or software configuration. In fact, all of his tickets that included the word "need" were tagged as a request except for two which were student-related.

Christina

Views. Christina is an administrator at the high school, where she works as a liaison between the administration and staff. When she is needed, she substitutes for other teachers. She is very easy to relate to and uses the same character when working in classrooms. This trait comes out in her emails and everyday conversations. Christina has had no technical experience related to computers whatsoever, and this at times shows in her statements.

Christina enjoys the ease of KACE because it keeps her focused. Through KACE, she believes that she is able to provide more detail and categorization for her technical issues. Because of the layout of the statements, it gives her a form to follow or, in writing terms, a genre. She appreciates KACE because it keeps everything organized, opposed to emails that can become buried below incoming emails. With KACE, she feels that her issues are always heard and will be resolved.

Statements. The fact that Christina does not work in a computer lab directly affects the quantity of the statements she has had to create, which is a mere six. This is 57% lower than Ethan and Lisa. Because she does not work in a computer lab like Ethan and Lisa, she is not as experienced. This shows in several of her statements; two times, the equipment was simply not plugged in. Her descriptions are kept short, much like Ethan's, to an average of seven words. She takes advantage of parentheses to provide more information in the description area. In four instances, she uses parentheses to specify what item isn't working (2 instances), what she has tried to diagnose (1 instance), or what she thinks the problem is (1 instance). Unlike Lisa and Ethan, she finds a way to provide all the information needed to portray the problem through the description. This affects how she writes her comments, as instead of providing background information, she includes her symptoms and what she has done to diagnose it. Her comments on average are kept to a reasonable length of sixteen words.

Like Ethan, Christina does not use much punctuation, averaging 1.5 commas/periods per statement. Christina does not provide as much information as the other subjects because she simply does not face issues as complex as the ones they do, and is unable to elaborate in much detail before her statements become redundant.

Looking at all of her statements, she does not seem to use the correct tags, especially when looking at the `With What` field. Her `Who's Affected` field seems to have no pattern, primarily choosing singular tags, when the problems affect more than one person.

Teacher:	**Christina**			**Lisa**			**Ethan**		
	Key	#	%	Key	#	%	Key	#	%
With What:	Hardware::Dell Desktop::Not Operational	3	50%	Hardware::Dell Desktop::No Access	12	75%	Other	6	50%
	Hardware::Dell Desktop::No Access	2	33%	Software::Backups	2	13%	Hardware::Printer::Toner/Ink	2	17%
	Hardware::Other	1	17%	Hardware::Dell Desktop::Not Operational	1	6%	Network::Not Working::To My School	2	17%
				Hardware::HP Desktop::No Access	1	6%	AV Equipment::Projector::Not Working::Power Issue	1	8%
				No Access General	13	81%	Hardware::Dell Desktop::Not Operational	1	8%
Who's Affected:	1 person inconvenienced	4	67%	Many people inconvenienced	11	69%	1 person inconvenienced	6	50%
	1 person cannot work	1	17%	Many people cannot work	3	19%	Many people cannot work	3	25%
	Many people inconvenienced	1	17%	1 person inconvenienced	2	13%	Many people inconvenienced	3	25%
	1 person general	5	83%						
Type of Assistance:	Problem	5	83%	Problem	16	100%	Problem	8	67%
	Request	1	17%				Request	4	33%
Real issue:	Failed Hardware	3	50%	Connection	6	38%	Software - Share Access	3	25%
	Connection	2	33%	Ink	5	31%	Ink	3	25%
	Hardware - Misdiagnosis	1	17%	Software	3	19%	Failed Hardware	3	25%
				Printer Warning	1	6%	Software - General	2	17%
				Failed Hardware	1	6%	Hardware	1	8%

Figure 5: Table of most commonly used keys and tags, along with number of tickets and percent of personal tickets.

Analysis

Although the school system imposed KACE on the teachers, each teacher has adopted a different style. Each teacher has distinguishing language and patterns that can be identified in these rather simple genres. To cite a clear example, Lisa tends to dedicate more time in filling out insightful descriptions and comments, rather than tagging with more detail, specifically the `Who's Affected` and `With What` fields. Ethan, on the other hand, keeps his descriptions brief and comments short. He is able to portray roughly the same information as Lisa because he puts more effort into tagging, specifically the `With What` field. Ethan takes advantage of `Hardware::Printer::Toner/Ink` tag when he needs printer ink while Lisa uses the `Hardware::Dell Desktop::No Access` tag 81% of the time, regardless of the issue.

These different styles seem to have no effect on the sysadmin's capability to interpret the statements. On all statements, the amount of comments from the sysadmin are within 8% of each other, meaning that all teachers are equally as effective at portraying their issues, and the sysadmin doesn't need to ask follow-up questions.

Further analysis suggests the four C's that Row described are paralleled in the KACE statements. The clarity of purpose is declared through the `Type of Assistance` field where only problem and request are allowed. This adds information about what exactly is needed of the support team. Customer context is found in the `Who's Affected` field, which provides information about the severity of the issue and who needs the assistance. Further context, as described by Dombrowski, is added through the `With What` field and the comments. This context is what allows the expert to take meaning from potential erroneous data provided by the non-expert. Finally, "communicate with" is fulfilled through the KACE system itself by allowing bi-directional personal communication.

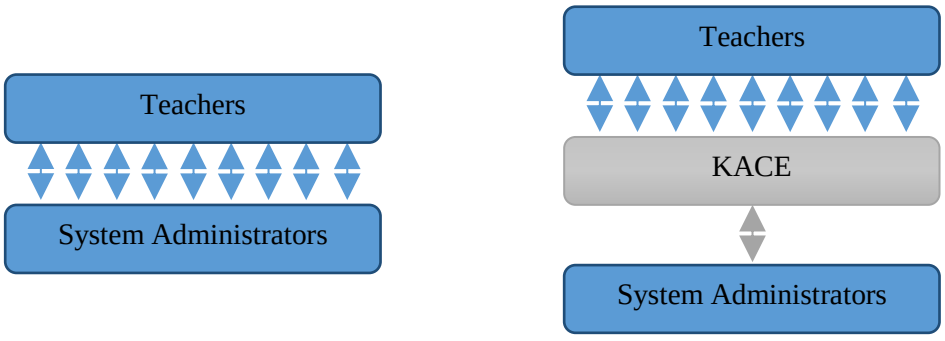

Figure 6: Comparison of communication patterns with and without KACE.

I attribute the efficiency of KACE to two central ideas: first, it is a tight and concise genre and, second, it is a rather public approach to communication.

The development of the KACE system greatly aligns with the findings of Mazzurco, et al. They proposed that in designing anything there are two types of considerations, technical and non-technical. These considerations quickly become "constraints" for the engineers. According to the Accreditation Board for Engineering and Technology (ABET), they need to develop a "design . . . within realistic constraints such as economic, environmental, social, political, ethical, health and

safety, manufacturability, and sustainability" to accomplish something (qtd. in Mazzurco, et al. 68). What's interesting is that the engineers need to place prominent focus on the people who will interact with the system rather than the technical system itself. In a sense, the developers of KACE maintain a conversation with the end users though the system they developed to facilitate communication. While constraints were imposed on the engineers and developers of KACE, they also have imposed constraints on the users through the strict genre they created via KACE statements.

The KACE statement genre is able to facilitate communication by reducing the girth and fluff of communication. The genre greatly limits and imposes constraints on the users of the system. It does this by forcing users, in this case both non-experts and experts alike (the teachers and sysadmins), to be brief in their descriptions and classify their thoughts. Essentially, this reduces the word choice and opportunities for extensive elaboration in these statements. This results in barebones communication, much like an outline between the two parties. It is just enough to get the point across quickly and effectively.

KACE greatly resembles the social media approach as communication is essentially considered public (Gopsill, et al.). For example, without KACE, teachers would all be emailing a single system administrator. In fact, there are several sysadmins throughout the school district who specialize in different aspects. With this email approach only one expert is initially notified. Granted there is the option to email multiple sysadmins, but then they could end up working on the same task, being drastically inefficient. The KACE help desk allows other sysadmins access to its central service desk. This way KACE is able to assign the appropriate expert to help assist and all sysadmins are able to check the status of tickets as they progress. This also allows schools and the school district to keep a record of troublesome computers and parts. They can utilize this data when considering purchasing more equipment.

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Holistically, what my data shows is that KACE is a means of reaching out for support. The technical knowledge needed to be effective in the tickets is minimal. Even though these tickets are viewed by someone extremely technically literate, it does not affect the ability to quickly and promptly solve the problem. Christina described KACE as a means to call for help and to reach out, and KACE is just that. In the realm of the high school activity system, KACE can best be summed up as a tool to reach a tool. The KACE system is used to gather the sysadmin's attention, the tool, in an organized and prioritized manner. Once they have their attention, they can work together to repair computers so the teachers can teach the students in a more efficient manner, fulfilling the common goal.

This initial finding is not conclusive in and of itself. It shows that there is some leeway in the accuracy of the material in the genre. But generally, there are two opposing trends that can be taken away from this genre analysis. For one, some users relied on elaborat textual descriptions accompanied by examples and support (Lisa). Second, others used accurate but brief tidbits of information (Ethan). Employing either of these generates accurate and effective communication. If either of these trends are partially employed, lacking both elaboration and accurate information, communication will be hindered and thus less effective (Christina). To put it simply, if one elaborates eventually they will be understood; likewise, if they are accurate and brief they will also be understood.

Discussion

Using the email-based system encouraged what can be described as polite speech, which communicates politeness rather than literal intent to the audience. Riley observed this in the form of "clarity and politeness," which is clearly found in emails with "Hello" and "Thank you" components. With the usage of KACE the politeness component is nearly nonexistent. The usage of tickets transforms the speech acts from propositional and indirect to implicative statements. To give an example: "Would you please change the bulb in the projector? It is giving a low life warning," as opposed to, "Projector bulb needs changed, low life warning." This simple change of speech acts shortens the length of the message from sixteen words to a mere seven, all while portraying the exact same information and intent. This lists the problem in a much clearer manner, making it easier to categorize and archive these types of tickets, resulting in increased efficiency.

Relating back to the purpose of KACE, the removal of polite speech is just one of many positive results. KACE itself is for management. When the fields in the tickets are not thoroughly filled out there are two problems that arise. The first is short term, as IT support staff is unable to tend to these tickets as quickly and effectively when compared to detailed tickets. When tickets are not detailed the support staff is unable to categorize the issues and assign the correct personnel. This results in wasted hours diagnosing the problem and potentially increases the down time of the affected user(s). In the long term, inadequate KACE tickets directly cost the organization precious money. Stated earlier, KACE tickets serve a major role of collecting analytics and inventory data. This data is used by organizations when considering purchasing more equipment. Without this data, organizations can be purchasing hardware that is prone to failure and headache. Over time, making educated purchasing decisions will reduce downtime in the workforce and reduce money spent on both support personnel and repair fees.

The short-term effects were mostly unnoticed in this study. The sysadmin was able to diagnose the problems and resolve them without any notable delays. However, in the long term the organization in this study is missing out on precious data. I attribute this data loss to users who do not appropriately and accurately tag—in this case, Lisa and Christina. Based on my interviews, I am led to believe that this is because the teachers were never informed of the purpose of the KACE tickets and implications of not thoroughly filling them out. They are fully unaware of the long-term impact of filling out these statements. This is not their fault; it is in how the KACE system was implemented in this organization. The resolution is to go back to the four steps of effective technical communication, specifically clarity of purpose.

If one is experiencing ineffective and incomplete input from non-experts, some training may be in order. As far as the staff knows, their methods are perfectly acceptable. The solution is to fully employ Row's four C's: clarity of purpose, customer's context, concise content, and communicate with, putting extra emphasis on clarity of purpose in order to portray the true importance and implications of the non-experts' actions.

Works Cited

Bazerman, Charles. "Speech Acts, Genres, and Activity Systems: How Texts Organize Activity and People." Wardle and Downs, 365-93. Originally published in *What Writing Does and How It Does It: An Introduction to Analyzing Texts and Textual Practices*, edited by Charles Bazerman and Paul Prior, Routledge, 2004, pp. 309-39.

Collins, Harry, and Martin Weinel. "Transmuted Expertise: How Technical Non-Experts Can Assess Experts and Expertise." *Argumentation*, vol.25, no. 3, 2011, pp. 401-13. *Communication & Mass Media Complete*, doi: 10.1007/s10503-011-9217-8.

Crawford, Mark. "How Engineers Can Improve Technical Writing." *ASME*, Sept. 2012,

www.asme.org/career-education/articles/business-writing/how-engineers-can-improve-technical-writing.

Dombrowski, Paul M. "Practicing 'Safe' Technical Communication." *Journal of Technical Writing & Communication*, vol. 41, no. 3, 2011, pp. 255-70. *Communication & Mass Media Complete*, doi: 10.2190/TW.41.3.c.

Gopsill, James A., et al. "A Social Media Framework to Support Engineering Design Communication." *Advanced Engineering Informatics*, vol. 27, no. 4, pp. 580-97. *ScienceDirect*, doi:10.1016/j.aei.2013.07.002.

Kain, Donna and Wardle, Elizabeth. "Activity Theory: An Introduction for the Writing Classroom." Wardle and Downs, pp. 273-83.

Mazzurco, Andrea, et al. "The Energy Conversion Playground (ECP) Design Task: Assessing How Students Think about Technical and Non-Technical Considerations in Sustainable Community Development." *International Journal for Service Learning in Engineering*, vol. 9, no. 2, 2014, pp. 64-84. *Academic Search Premier*, doi: 10.24908/ijsle.v9i2.5585.

Riley, Kathryn. "Telling More than the Truth: Implicature, Speech Acts, and Ethics in Professional Communication." *Journal of Business Ethics*, vol. 12, no. 3, 1993, pp. 179–196. *JSTOR*, www.jstor.org/stable/25072388.

Row, Shelley. "Secrets to Communicating Technical Topics to Non-Technical Audiences." *Ite Journal*, vol. 84, no. 3, 2014, pp. 40-41. *ProQuest*, www.ite.org/itejournal/.

Swales, John. "The Concept of Discourse Community." Wardle and Downs, p. 215-28. Originally published in *Genre Analysis: English in Academic and Research Settings*, Cambridge UP, 1990, pp. 21-32.

Wardle, Elizabeth, and Doug Downs, editors. *Writing about Writing: A College Reader*. 2nd ed., Bedford/St. Martin's, 2014.

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