

# MAPPING THE CULTURAL CONTEXT OF CARE

## An approach to patient-centered design in international contexts

Kirk St.Amant

*Louisiana Tech University, USA*

In today's interconnected global society, health and medical communication must increasingly cover a growing range of international and intercultural contexts. Meeting the communication and design expectations of audiences from different cultures and in other nations, however, is a complex process. By focusing on usability, individuals can create materials that effectively meet patient expectations associated with the context(s) in which care—or processes related maintaining or improving one's health and wellness—is administered. To facilitate this process, this entry presents international patient experience design (I-PXD) as an approach that can help individuals better understand the dynamics of usability in different contexts around the world. By using prototype theory as a foundation for mapping the contexts in which patients use materials, I-PXD allows individuals to identify the variables affecting usability in different parts of the globe and design materials to account for those factors.

**Keywords.** International patient experience design (I-PXD), Prototype theory, Usability, Contexts, Variables, Mapping.

### Introduction

The interconnected nature of today's world means health or medical events occurring in one nation can quickly ripple across globe (e.g., the international spread of the Zika virus in 2015-2016) (Ding, 2014; Hennessey, Fischer, & Staples, 2016). Individuals sharing health and medical information thus need to



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increasingly think in terms of designing materials for globally dispersed audiences. Specifically, these individuals need to understand *international patient experience design* (I-PXD)—the process of designing materials to meet the expectations of patients in different cultures. Doing so is not easy. Rather, successful I-PXD involves understanding and addressing the cultural context(s) in which patients use materials. This entry examines how prototype theory can provide a mechanism for achieving effective I-PXD.

## Usability and Context

What determines if something is usable for a given audience? Often, it is the setting—or context—in which one uses information or materials to perform a process (Garrett, 2010; Hassenzahl & Tractinsky, 2006; Norman, 2002; Nielson Norman Group, 2014). If, for example, I provide readers with instructions on how to take blood pressure, those instructions must address

- The materials individuals can readily access in the setting where they perform such tasks (e.g., access to a digital blood pressure monitor vs. an analog blood pressure cuff and stethoscope).
- The individuals who, in that setting, can use those materials to achieve that objective (e.g., an automated monitor the patient uses vs. an analog blood pressure cuff and stethoscope used by a healthcare provider).

Accordingly, for materials to be usable, their design needs to reflect the context in which individuals perform the related process.

This connection means the first step in designing materials is to understand the context or setting in which the intended audience will use them. In health and medical environments, such factors can apply to a range of items and individuals depending on where care—activities associated with health and wellness—is administered. This approach, moreover, applies across media—from a printed document to a web-based interface to an app on a mobile phone.

To understand this *context of use*, individuals need to identify those elements—or variables—that can affect how individuals perform a task in a given

setting. Such contexts of use, however, can be quite complex. Individuals therefore need to identify and understand those contextual factors/variables directly connected to usability (i.e., *variables of use*) and those that are not (Petroski, 1994). After all, every item or individual in a given setting might not be essential to using certain materials as intended.

## **Culture and Context of Use**

Such factors can be difficult to track in one's native culture. When expanded to different international contexts, the complexities can be even more pronounced (Sun, 2012; Otto & Smith, 2013). This situation arises because the context in which individuals perform a given activity can vary from culture to culture (Otto & Smith, 2013). Many Anglo-Americans, for example, visit a physician to obtain a prescription, which the physician issues after diagnosing a condition; the patient then takes this prescription to a pharmacy where a pharmacist dispenses the related medication (a two-place, two-person process). In France, however, it is not uncommon (particularly with less acute conditions) for individuals to go directly to the pharmacy and consult with the pharmacist, who diagnoses the condition and fills the related prescription in the same place (a one-place, one-person process) (French 'pharmacies,' n. d.). This difference means U.S. materials on how to obtain a prescription might not work in France, where audiences might question the "extra step" (i.e., going to the physician first, and then going to a separate pharmacy). In this way, a failure to recognize—and design to address—such differences related to context of use can affect the usability of materials in certain international settings. This concept is central to I-PXD.

I-PXD, or creating usable health and medical materials for international audiences, requires an understanding of the contexts in which individuals will use those materials. Specifically, one needs to know where the members of a particular audience will try to use a given item/perform a particular task and what other factors are expected to be present in that environment and to be used to perform that process. The task is thus akin to mapping a terrain. That is, the individual creating the materials must

- Review the environment.
- Identify variables of use essential to performing the process in that setting.
- Design materials that reflect the dynamics of that context.

Through mapping such contexts of use, individuals can create materials that better reflect user expectations of and experiences relating to design—the objective of I-PXD.

This mapping process is important, for contexts of use can be cluttered with items—some essential to performing a process, others not. When projected to the contexts found in other cultures, nations, and regions, determining what items one needs vs. are not required to perform an activity can be complex (St.Amant, 2016). Individuals therefore need to identify the *variables of use* (i.e., those factors affecting if or how something can be used) in a given context of use to facilitate effective/usable design. The individual creating materials must then determine how such variables are connected to use/usability in that context. The resulting materials then need to be designed to include such variables and reflect the experiences/situations of the user in that setting.

These ideas of context of use associated with variables of use exist across almost every context in which an activity can be performed. The variations in the context that can occur from culture to culture can, however, seem unpredictable and almost infinite. Thus, effective *mapping of the context of use* is essential to successful user experience design (UXD) in different cultural and national environments.

## **Location, Experience, and Design**

Context of use is generally connected to physical location. As such, the materials and individuals available to perform a process in one physical setting might be different from those found in another. This situation means designing for usability in international settings is partially about culture, but it also involves place. Designing materials for Russian patients living in and seeking care in

Russia needs to reflect the realities of the items and individuals generally found in healthcare contexts in that physical setting. (Such factors reflect the *realities of usability* in that context.) If, however, a Russian patient seeks healthcare in Canada/in a Canadian-located context of care (e.g., flies to Canada to receive medical treatment), then related materials must reflect the physical realities of that new context of use (e.g., different materials available and different individuals present in this context).

Accordingly, while certain aspects of design remain connected to culture (e.g., the language used to convey information) others (e.g., content) will need to change to reflect what constitutes usability in that new physical context. These dynamics mean individuals should avoid designing one set of health and medical materials for members of culture X (e.g., all Belizeans). Rather, they should design such materials for when members of culture X engage in a process in location Y (e.g., a Belizean patient receiving a medical exam in Belize vs. in the U.S.). In this way, the dynamics of usability and design are connected to culture, but they also need to be adapted to recognize the realities of the physical location where those materials will be used. I-PXD, in turn, focuses on understanding how such factors of culture influence expectations of usability/how to use items in a given setting.

## **Usability and the Context of Care**

This connection between context and usability can be particularly acute when it comes to designing material for patients—the individuals who receive care (Meloncon, 2016). Such materials generally provide patients with the information needed to perform activities associated with maintaining or restoring a particular health-related condition (i.e., staying healthy or returning to a certain state of health). The issue, however, becomes the variables patients expect to encounter in the context where they use such health- or medical-related materials. The individuals developing these materials thus need to understand such contexts to create content patients can use effectively in that setting. This process of designing to address patient needs and expectations has been referred to as

“patient experience design” (Meloncon, 2016). It requires an understanding of patient expectations relating to information and to the context in which patients access and use that information.

In terms of health and medical communication, the context in which individuals use materials is often associated with some aspect of receiving care. (In this case, “care” refers to processes that maintain the patient’s current level of health or restore the patient to a particular level of health.) These materials generally cover the kinds of care patients administer to themselves or that others must perform on/for the patient. The idea is to provide patients with the information needed to effectively perform, engage with others, or decide upon in relation to different activities associated with receiving care. (Do I wish to perform this process on myself? Do I wish to allow another person to perform this process on me? Do I wish to have this process performed at all?)

To develop such materials, individuals need to know

- The context in which care will be administered to the patient.
- The individual(s) who will administer care in this context (i.e., the patient or someone else).
- The items the individual(s) need(s) to administering this kind of care in this context (St.Amant, 2015).

These three areas represent the variables of care one must identify to understand a particular context of use associated with caregiving. These areas are also the variables one must address the when developing materials to meet patient expectations of usability in a given *context of care* (e.g., the setting in which care is administered to/received by a patient).

Such contextual factors, however, can vary from culture to culture and from location to location in a nation or region (St.Amant, 2015). The challenge becomes mapping such variables in a way that involves their effective identification and use when designing materials for patients in different cultures and nations. Prototype theory, from cognitive psychology, can help with such mapping.

## Prototypes and Credibility

According to prototype theory, humans often associate a given image with what a particular object or item should look like and what that object should do (Rosh, 1978; Aitchison, 1994; St.Amant, 2015). For example, when an individual hears the word “cup,” a particular image of a certain kind of item generally appears in the person’s mind. That mental image represents the prototype, or best example of what something should look like for the person to consider it a cup. At the same time, the individual also accesses a set of expectations associated with the characteristics of use of that item (e.g., cups are used to hold liquid for drinking) (Aitchison, 1994).

When that person encounters a new object, she or he compares it with his or her prototype (i.e., ideal representation) for “cup” to see how closely that new item matches the prototype. The closer the match, the more likely the object is to be considered an acceptable version of a cup. The lesser the match, the lesser the chances the item will be considered an effective representation of a cup. Likewise, the individual will expect that object—identified as a cup—to be used in certain ways (i.e., as a drinking vessel) based on this identification.

These factors of identification affect usability. If, for example, I need a cup to perform a process in a particular context, I will seek out that item when performing that process. In this setting, items that look like my ideal for a cup are usable ones, for they help me perform the desired process. Items that do not resemble a cup, by contrast, are less usable in that context. Moreover, once identified, I will tend to use the cup only in certain ways in that context—ways associated with my expectations of how individuals use cups in that setting. Materials that fail to account for these factors might reference another item individuals can use to perform the same function as a cup in that context. The issue thus becomes

- Will the user recognize the object as one that can perform a needed function.
- Will the user view this alternative as an acceptable one for performing this process.

Prototypes can thus influence usability in relation to a given context of use.

What is particularly interesting about this process is that it is not a matter of comparing a prototype—in its entirety—to another object in its entirety. Rather, individuals compare the characteristics, or features, of a prototype to those of a new object when trying to determine what that object is (Aitchison, 1994). The more characteristics a new item has in common with a particular prototype, the more likely that new item is to be considered a “recognizable” or “acceptable” or “usable” example of the item represented by that prototype (Aitchison, 1994; St.Amant, 2016). (The more something looks like my prototype for a cup, the more likely I am to identify it as and use it as a cup.) The fewer common characteristics, the less likely I am to identify the item as something and the less likely I am to use it in a particular way (associated with identification) in a given setting. The objective of I-PXD is to use these prototype associations as the foundation for researching and understanding cultural expectations of usability in different contexts of use.

## **Prototypes and Culture**

From an I-PXD perspective, the interesting aspect of prototypes is what something should look like and can be used for can vary from culture to culture (Kostelnick, 2011; Kostelnick, 1998). This is because the prototypes humans have for different items are based on exposure over time (Aitchison, 1994). That is, the more you see something in a particular context in your native culture and are told “this is a cup,” the more likely you are to associate what a cup looks like and what features it should have with that item you’ve seen repeatedly over time. Similarly, the more often you see that item used in a particular way in a particular setting, the more likely you are to expect that object to be in that setting and to be used in that way in that context. Thus, experience influences expectations, and this connection has important implications for design and usability.

In the case of a health and medical context, the issue becomes what something should look like to be recognized as a credible medical device or be used correctly/as intended in that setting can vary from culture to culture based on

experience. A pinard horn—a hollow, often wooden tube that resembles a cup—is often viewed as an appropriate and acceptable stethoscope/technology for listening to heartbeats (i.e., a stethoscope) or listening to the movements of a fetus in utero (e.g., an ultrasound-like process) by patients in the care-related contexts of many emerging economies (Maternova). For individuals in other cultures—such as the United States—where different technologies are associated with performing those processes in those contexts—such a technology might be considered an unrecognized and inappropriate item to use in those settings.

Accordingly, health or medical materials that contain images with or discuss uses of a pinard horn in relation to cardiac or neonatal care might be usable—based upon recognition of the item—by some cultural audiences, but not others. Moreover, as noted, such expectations are often connected to associations with the physical context—or location—in which individuals have come to expect such care to be administered. As such, they can vary for location to location within and outside of a given culture. In this way, prototype theory can serve as a foundation for studying contexts of care by helping individuals identify key variables of use in those contexts.

It should be noted that this use of prototype theory for understanding and guiding cultural design expectations is not new to professional communication. It has, for example, been used by others to present frameworks for examining the design of websites and of other online materials for audiences from other cultures. (See, for example, St.Amant, 2005a; Treiblmaier, 2007; Tong & Robertson, 2008; and Zemliansky, 2012.) Similar uses of prototype theory have also been suggested as a mechanism for international visual/image design in general (see St.Amant 2005b). More recently, some individuals have advocated expanding this use of prototype theory to examine health and medical communication in international contexts (see St.Amant, 2015; Meloncon & Frost, 2015; Zhang, 2016). This entry seeks to build on such previous work by connecting the use of prototype theory more directly to usability and design in international settings. In so doing, this entry also seeks to provide a more complete approach to integrating the use of prototype theory into international health and medical communication.

## Prototypes of Context

From an I-PXD/usability and design perspective, prototype theory can help designers map a given context of use in different cultures. That is, most individuals have a particular prototype—or visual model—for what the setting in which one received care should look like. (If, for example, I say “examination room,” an image of a specific-looking kind of room with particular items in it usually pops to mind.) So, humans have a prototype for “*context of care*.” Accordingly, the more a given setting addresses or resembles that prototype, the more likely individuals are to consider care-related information based on or associated with that setting as “credible” and “usable.” This visual model of context of care can serve as the foundation for developing materials designed to present usable information on processes that take place in that context. The key question is how to review the prototype certain patients have for a particular context of care in order to identify those characteristics /variables (items or persons) individuals expect to be in that context and expect to be involved with performing a given activity. (These could be care-related activities individuals perform on themselves or allow others—recognized healthcare practitioners—to perform on them.)

To address such expectations, one needs to identify two central factors:

- *Object variables/characteristics*: The tools or other items/materials one expects to encounter in a given context of care. These variables/characteristics can include everything from the implements one expects to find in a given setting (e.g., medical devices) to the furnishings expected in a given space (e.g., stools, counters, etc.). These are the items one associates with expectations of how a care-related activity is to be performed (e.g., using a blood pressure cuff while the patient is seated on an examining table).
- *Human variables/characteristics*: The individuals one expects to encounter in this context: specifically, those persons who will administer care or use the available objects of care in a given context to perform a particular care-related activity (e.g., the individual who will use the blood pressure

cuff to take a diagnostic reading as the patient is seated on the examining table).

Mapping these two variables effectively involves identifying what actions patients expect to take place in a given context of care. What, for example, do patients expect to be done to them in a given setting? What will be used to perform this action, and where will the patient be located as this action takes place? (Do they, for example, lie on an examining table while a stethoscope is used to monitor their heart rate?) Similarly, who in that context performs certain care-related activities using those materials? Does the patient perform the activity on her- or himself, or is a physician/ nurse/some other individual expected to perform such care-related actions in such a context? By knowing what activities individuals expect to encounter, individuals can design materials that meet these expectations of care and that patients can use effectively in the related context of care.

This approach is central to international patient experience design (I-PXD). That is, prototype theory can be used to map the experiences of patients who have received care in different settings in other cultures. Individuals can then use this mapping to design materials that more accurately reflect patient experiences in such culture-specific locations and contexts of care. In so doing, individuals can develop materials that better meet such expectations and thus are easier for the patients receiving care in that context to use effectively and as intended.

## **Variables and Mapping the Context of Care**

These factors become the variables affecting I-PXD in a given context of care. As such, they are also the characteristics patients in other cultures associate with the prototype for credible/acceptable setting for administering and receiving care. The individuals designing such materials therefore need to use this prototype-related information to map such contexts and develop designs/materials that reflect what and who patients expect to encounter in these contexts. Such a prototype-based map or model can facilitate the creation of materials—from written documentation to visual instructions to web-based content—that meet patient

expectations for that context and are thus more usable in relation to patient expectations of that context.

The question becomes how to access the prototypes other cultures have for a given context of care? From an I-PXD perspective, the first step to answering this question is identifying the context in which a particular kind of care-related activity takes place in the culture of the intended audience (e.g., “Where do individuals in culture X check their blood pressure?”). Doing so could involve interviewing the members of/patients from a given culture to ask where such activities are usually performed (e.g., “Where do you go to have your blood pressure checked?”). It can also involve doing a review of the current literature on that culture to determine where such care-related activities tend to occur in that culture.

Once the context of care is known, the next step in the I-PXD process is identifying the variables patients expects to encounter in that context. To do so, individuals should

- Review multiple images or descriptions of that context in that culture to identify the variables that repeatedly appear in that environment (a process based on guesswork and the reviewer’s ability to “see” items that appear in a different cultural setting) (St.Amant, 2016).
- Interview multiple individuals (and/or conduct focus groups comprised of individuals) from the intended cultural audience and ask them to describe the process of receiving care in that context. Doing so will require the interviewer to repeatedly stop individuals in mid-description to ask clarifying questions (e.g., “When you say this action is performed – Who performs that action? What do they use to perform it? How do they perform the action?”). Such interviews should be done with multiple interviewees from a culture to track how often certain objects or persons are noted in relation to performing particular caregiving activities in a given context of care. From this process, certain variable should emerge as more common and thus the characteristics/variables of use associated with credible/usable care-related actions in that context.

- Engage in observational/ethnographic research of such contexts. In this case, the researcher would observe the process by which care is commonly administered in a given location within a culture and note how care-related activities are performed, by whom, and using what. By engaging in such observational research over multiple instances, researchers can begin to identify aspects/characteristics that repeatedly appear in relation to performing the related care-giving activity in that environment.

As with many UXD processes, individuals can use this initial I-PXD data to create wireframes/beta materials that can be reviewed by and tested with the related audience and modified based on feedback.

## Conclusion

Culture is a complex factor affecting communication expectations and practices in a variety of ways (Otto & Smith, 2013). As such, culture has pronounced implications for design and usability in different international and cultural settings. These factors can be particularly problematic in health and medical context where one must create materials for patients receiving a particular kind of care. By using an I-PXD approach founded on prototype theory, individuals can better understand the dynamics of the context of care in different cultures. These individuals can then conduct the research needed to map such contexts to identify the variables to address when developing materials to meet the needs and expectations of patients in different cultural settings. ■

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## About the author

Kirk St.Amant is a professor and the Eunice C. Williamson Endowed Chair in technical communication at Louisiana Tech University (USA), and he is also an adjunct professor of International Health and Medical Communication with the University of Limerick (Ireland). His main research interests are international communication and information design for global audiences with a particular focus on the globalization of online education and health and medical communication for international audiences.

**Email.** [stamantk@latech.edu](mailto:stamantk@latech.edu)

### **Contact.**

Louisiana Tech University  
P.O. Box 3162  
Railroad Ave. GTM Room 236  
Ruston, LA 71272  
USA

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