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2017

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Suggested citation:

Sellen, Kate (2017) Problem based learning: Developing competency in knowledge integration in health design. In: Conference: The 19th International Conference on Engineering and Product Design Education, 7-8 Sep 2017, Oslo, Norway. (Submitted) Available at http://openresearch.ocadu.ca/id/eprint/1863/

PROBLEM BASED LEARNING: DEVELOPING COMPETENCY IN KNOWLEDGE INTEGRATION IN HEALTH DESIGN

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ABSTRACT
Different communities, organizations, and people hold different views on their own and others wellbeing. It is often challenging to balance different perspectives during the design process when the truth of medicine is competing with the truth of social media and the everyday experience of wellbeing of patients, caregivers, family and friends. In the context of the Masters of Health Design at OCAD University, we develop students' competency in working with truth through challenging students to engage with multiple 'truths' in the design process, engaging deliberately in identifying and working with multiple truth regimes as part of a problem based learning approach. This includes how truth regimes impact the understanding of a challenge area, techniques for engaging with stakeholders, communicating and developing concepts, and the process of seeking and working with feedback for refining and iterating, and finally in communicating project solutions. By engaging in problem based learning, students are exposed to the real challenges of different stakeholder perspectives and in particular how different truth regimes serve to impact what counts as legitimate knowledge and legitimate knowledge representation.

Keywords: Health Design, Knowledge, Process, Problem Based Learning, Stakeholder Engagement

1 INTRODUCTION

The need to develop competency among Design for Health masters' students in working with different kinds of 'truth', arises out of a recognition that design in the health context, requires negotiating and integrating knowledge from truth regimes that are very different from knowledge that arises through the process of design practice. While design practitioners may enjoy legitimacy in other domains, this is often not the case in medical or health related settings where knowledge arising from the practice of design may be unfamiliar as well as in competition or opposition to established truth regimes of the evidence base of bio-medicine, humanistic medicine, or the patient experience[1].

In the health sector, it could be said that there are several styles of truth regime commonly in operation that a designer working in the health domain would need to integrate. At first glance, the scientific truth of medicine would seem likely to dominate. This is the first challenge for students. In the first stages of understanding a challenge area, recognition and interpretation of scientific sources of knowledge may be unfamiliar to the design process for many students and may need to be supported through technique development in seeking and synthesizing medically related evidence for design. However, the role of the 'doctor' or physician can be a particular and dominant one, and signals that the role of clinicians in a design related project may involve negotiation by the designer in, or with, a truth regime that is not based on evidence but on a humanistic approach. In the course of the M. Des in Design

for Health at OCAD U, we support students to develop competencies in integrating knowledge from different truth regimes as part of their learning process, recognizing also that design for health students themselves operate within their own truth regime, one that may privilege designer, process, prototype and designed object. With this paper, the intent is not to revisit conversations on design and science, discipline and practice[2], but to share the experience of a developing framework that prompts further thought on these topics in the context of design for health.

1.1 The Truth Regime

A truth regime can be described as a "general politics of truth", to quote Weir[3], comprising of: ways in which truth is identified and represented; techniques that indicate true or false statements; techniques for how statements are evaluated/or not as truthful; and the status accorded to those that speak 'truth'.

The concept of the truth regime was discussed by Foucault in 1960s and 70s alongside ideas about knowledge and power, and in particular in reference to scientific and quasi-scientific truth in modernity[4]. Analyses of the concept of the truth regime and the implications of this idea are scarce, however, a few examples of its use to interpret biomedicine and the experience of health and wellbeing do exist[5,6]. The ideas described in this paper, for instance, are drawn from the work of Lorna Weir[3].Weir provides an interpretation of Foucault that highlights different types of truth regimes in addition to scientific and quasi-scientific truth – these form the basis of the framework proposed. Developing this work for relevancy to the health context and to design practice, the framework also draws on the work of Sam Ladner[7] who uses Weir's work to advocate for the use of the truth regime concept in the practice of ethnography in the private sector. Both Weir and Ladner emphasize several types of truth regime that identify, represent, and present truth in different ways. In summary as:

- Veridical truth – scientific truth based on the constant search both for error and new data
- Governmental truth – principally concerned with governing behavior and quasi-scientific
- Symbolic truth – represents truth through ritual and role, rending invisible truth visible
- Mundane truth- truth that arises from everyday experience, common sense or common knowledge

While these truth regimes may be operating in any domain they are present in prominent ways in the health sector. In this paper, a framework for understanding and working with these different kinds of truth will be shared - including how it has been applied to knowledge integration in the design for a geriatric psychology unit during a problem based learning engagement for Design for Health master's students.

1.2 Problem Based Learning in Health Design

Students of health design are supported in their exploration and mastery of knowledge integration in design for health contexts through problem based learning supported by the progressive development of design technique and critical thinking skills. Problem based learning The curriculum of the MDes in Design for Health at OCAD U is organized into a series of four problem based learning engagements, which are developed and carried out in partnership health sector partners. Projects are supported through embedded activities with health sector partners as well as studio based learning. The first two problem based learning engagements are supported by seminar based learning and it's in the context of these supporting seminars that key concepts from medical anthropology are introduced, the social science and critical sociology of biomedicine, and the concept of the truth regime.

2

The program itself includes students and faculty from many different design backgrounds including architecture, interior and environmental design, graphic and communication design, interaction design, engineering and product design, as well as students who are engaged in patient advocacy, patient experience, and healthcare process and quality improvement. The students themselves are challenged with teamwork that necessarily involves understanding different design approaches and traditions. The supporting seminar structure provides an opportunity to explore and discuss the development and role of different design approaches and traditions, from the more veridical or scientific approaches of engineering, user centered design and usability, to the critical design and conceptual design approaches that are perhaps more symbolic, and the inclusion of co-design and participatory design techniques that that may support the mundane or everyday truth of participants. Students, at the same time respond to the problem based learning engagement, choosing what design approach to take, how to organize their involvement with stakeholders, and how and what to research and prioritize in the design process.

1.3 Problem Based Learning – Geriatric Psychology Unit Re-Design

In the case of the geriatric psychology unit, the students were presented with a problem based learning engagement with a local rehabilitation center. The stakeholders presented the students with the purpose of the engagement – to develop a redesign of the unit within the constraints of its existing footprint and with special consideration for the particular needs of the patient population that it serves. The type of design work or area of focus was left open with the expectation that any design discipline would be relevant. One of the first steps for students was to try to understand what the unit's purpose is, and what types of patients the unit serves. With this first step in a project, students are engaging with different truth regimes. How is the patient population defined? In medical terms? Or, in terms understood by nurses and clinicians on the unit, by family and friends, or the long-term care homes where many of the patients arrive from? Are they "Dr …'s" patients? Or are they defined by their behavior – which places them in the unit as a result of governmental forms of truth about their suitability/or not for a long-term care place? Students are challenged to explore the possibility that different truths about the unit and its patients, as well as its staff, family and friends, may be at play. In this way students learn from the challenge of negotiating different truths and the viability of different outcomes in terms of design solution – a key aspect of problem based learning[8]. It may be appropriate to decide to take a participatory approach in such a situation, as participatory techniques are intended to support multiple stakeholders and the politics of different positions[9], but similarly, an evidenced based approach in which students interrogate the evidence base for data on dementia, behavior, and designed elements such as lighting, artwork, flooring, furniture and activities, may also be appropriate – in considering these decisions as part of the learning process, students are asked to develop a rationale for their choices that demonstrate an awareness of different truth regimes, indeed a rationale and plan that makes use of different truth regimes in integrating knowledge to inform design.

2 TRUTH REGIMES IN HEALTH

Layering onto the choice of the design approach in responding to a problem based learning engagement, its useful for students to understand how truth regimes operate in the health context – for instance with the physician or clinician there may be ritual, codified roles, and the storytelling (humanistic medicine) that reinforces certain beliefs and structures that can be in conflict with bio-medicine or scientific evidenced based approaches[10]. Contrast this with the everyday truth of the patient – their experience of their wellbeing informing their beliefs and understanding of their situation and needs.

Setting aside governmental knowledge for now, Figure 1, illustrates three types of truth – mundane (here characterized as "life") symbolic, and scientific with reference to the concept of wellbeing. In this brief exploration of the concept of wellbeing we see several aspects of what Foucault describes as the "truth game"[4], namely different roles or figures that are able to "speak the truth", and specific reference points for each type of truth – for example the evidence or procedure of scientific truth. When we consider this representation, it illustrates how certain types of truth regime may be in conflict with each other and how some may be more open to change than others.

Life	Symbolic	Scientific
"The mundane everyday experience of wellbeing."	"What our leaders tell us about wellbeing."	"The science of wellbeing – concepts, experiments, and data."
Anyone Self-evident Truth vs Lie	Only specific figures Legitimate story Ritual	Scientists The evidence Procedure

Figure 1. Three Truth Regimes in Relation to Wellbeing

2.1 Scientific Truth in Health Design

In scientific truth, there is always the possibility for new evidence, new data or ways of measuring that allow for a change in direction. In relation to the dementia patients in the geriatric psychology unit, there is new science on dementia every day. In terms of a design approach working with scientific truth, students are encouraged to develop skills in working with the evidence base, interpreting scientific data, and synthesizing evidence. Part of this process of building competency also includes a critical understanding of the development of evidence based medicine and the way in which evidence based approaches are used in the health sector to organize innovation and change. Models of healthcare intervention design are compared to design approaches to identify opportunities and challenges for integration. In the case of the geriatric psychology unit re-design, students developed evidenced based scoping reviews that demonstrated to their stakeholders that they respect and understand the scientific truth relevant to the unit. They then presented design concept scans that demonstrated how such scientific truth can be reflected in design choices and outcomes.

2.2 Mundane Truth in Health Design

The staff on the unit experience new patients on a regular basis, and patterns of behavior may emerge through everyday experience of the work of the unit. The staff may share a collective mundane truth about how the unit works, the type of patients on the unit, and how certain designed objects or spaces serve to support or not the work of the unit. A common response from staff would be "We know the bathroom needs redesigning" based on the everyday experience of the difficulties persuading patients on the unit to accept intimate care (a term that comes from the governmental truth regime operating in the health sector and a criterion for deciding if a patient remains eligible for home or long-term care). However, further

probing and exploration of intimate care of older adults in care settings as well as some basic design ethnography revealed that the 'problem of the bathroom' starts well before the bathroom is experienced. This allowed a reframing of the problem away from the bathroom itself to the experience of pre-bathing – undressing and preparing for bathing. As mundane knowledge is open to change through everyday experience, students were encouraged to use a mundane and everyday story telling technique to communicate this reframing to stakeholders. In this way, the mundane truth of staff is respected, acknowledged and built on by students.

In the case of the geriatric psychology unit there is a barrier to interact with patients due to the advanced level of cognitive decline, however, in many other problem based learning engagements, working with patients, family and caregivers would be expected. The practice of experience based co-design is a common approach now advocated in the health sector to specifically address the inclusion of patient experience[11]. While there has been little attention paid to forms of mundane knowledge generally, the domain of health is the exception. Sociology and anthropology of health does seek to understand the relationship between biomedicine and lay knowledge/experience. Experienced based co-design has emerged as a counterpoint to evidence based approaches, with its emphasis on patient narratives, emotional touchpoints, and video based story telling. In the same way as students compare design approaches to evidenced based approaches, students are encouraged to compare and critique experience based co-design, and decide whether or not the techniques central to experienced based co-design will support the integration of mundane truth. One of the challenges for students in this regard is the number of other design based techniques that come from design approaches that also serve to represent mundane truth – personas and scenarios, for instance.

2.3 Symbolic Truth in Health Design

Symbolic truth manifests truths that are thought to exist but are not visible, and this manifestation is often conducted in particular ways that often include ritual and storytelling. Authorized speakers of symbolic truth are usually power holders, for example, the nurse practice leader, the surgeon, or representative of a clinical specialty, or, can be counterweights to those in power or those in dominant positions, for example, patient advocates, representatives with lived experience, or campaigners for health care access and equity. Organizations may also be 'keepers' of symbolic truth. The Mayo Clinic may hold symbolic truth about practice change, for instance. Symbolic truth will be familiar to designers, Jonathan Ive (Chief Design Officer, Apple Inc.) speaks the truth on design for Apple, for example. The ritual of the studio 'crit' or critique in which the faculty speaks the truth about whether a student's work is 'great design' or not, is another example. It is interesting to consider what truth regime may operate in design school – who decides what a great design is? Is great design only visible when it is declared as such, if so, then declaring something a great design is a symbolic gesture, and a claim that only certain individuals have the legitimacy to be able to make. A design may be declared incoherent in that same way that quasi-religious or symbolic truth regimes declare an opposing truth as 'incoherent'[4].

In the case of the geriatric psychology unit, and indeed across the long-term care and retirement care sector, there is symbolic truth in the idea of "home" and its importance to supporting the care of the elderly in contexts that are not "home"[12]. Indeed, stakeholders will routinely state "this is their [patients] home.", even though the average stay is 3-6 weeks, or in dialogue on the kind of qualities that are important to consider in the re-design of the unit, state that "it needs to look like a home". Typically, those who make these statements do so in public venues, in front of others, and speak from a position of authority over the unit, its staff, and the design project. In considering the re-design of the unit, scientific truth together with mundane truth, and the integration of knowledge from these through design, suggests a re-

design that does not replicate home. Students are then challenged with how to address the symbolic truth of the idea of "home" and to communicate proposals that avoid being interpreted as "incoherent". Recognizing that symbolic truth is operating in a given context can be a powerful idea in and of itself.

3   BUILDING COMPETENCY IN KNOWLEDGE INTEGRATION

Using a truth framework to support students' understanding of problem based learning engagements also supports the development of knowledge integration skills. In Table 1 below, which shows a blank framework, each type of truth regime is identified, along with questions that form a "truth game" referred to by Foucault. Introducing this framework to students in their first semester, the framework is used to support higher-level thinking about the concept of health, wellbeing, and biomedicine. With an initial exposure to social science and medical anthropology perspectives on health and wellbeing, humanistic medicine, and biomedicine, students are ready to work on problem based learning engagements. Working with the framework includes several activities: the framework provides a structure to seek out new knowledge across truth regimes; the framework encourages reflection on the diversity of stakeholder perspectives; the framework provides a reminder to students to actively integrate knowledge across all truth regimes.

Table 1. Truth Game Design Tool

	Mundane	Symbolic	Governmental (management of conduct)	Scientific
Story Summary				
Who speaks the truth?				
Truth vs. Non-Truth				
Knowledge is understood as…				
Knowledge is represented by …				

In addition, the framework prompts questions about the role of design, how truth regimes operate in design and design teams, and how truth operates in the process of design. Truth regimes engage in what Lorna Weir refers to as "signifying practices"[4] – the representation of truth as a second stage whereby truth is translated via speech, writing, and visual arts. In the case of design, the prototype or model as a form of truth representation. The framework implies that truth regimes share and represent knowledge in different ways and can be used in

concert with health sector models of knowledge integration familiar in public health[13]. For instance, among carers for older adults with dementia, knowledge may not reside in the evidence base, but it may be shared in sites for story telling such as online forums, and community centers. Recognizing where and how knowledge is represented and shared supports students in their planning and execution of design research activities.

The role of the designer is also brought into question by the framework – posing questions about the role of the designer in integrating knowledge across truth regimes, the position of the designer vis a vis the making judgements of value of certain types of truth over others. For instance, does the nurse's mundane knowledge of the everyday running of the unit take precedence over the evidence base on flooring choices for dementia? What responsibility does the designer have to different truth regimes and how can the design team integrate different truths in a timely and practical manner?

4   CONCLUSION

The experience of developing and implementing the truth framework, to support knowledge integration in problem based learning in health design, has been an additive experience for faculty and students. Engaging intellectually with the idea of "truth" and then translating this to the practicalities of design engagements with stakeholders, serves as a real test of the idea. It also serves to highlight conceptual overlaps between design approach and truth regime which is proving useful in iterating on design techniques and on hybrid approaches to design in health that integrate across truth regimes.

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7