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the Wabi-Sabi Principle in Aesthetics and Learning

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Abstract

OER-based learning has the potential to overcome many shortcomings and problems of traditional education. It is not hampered by IP restrictions; can depend on collaborative, cumulative, iterative refinement of resources; and the digital form provides unprecedented flexibility with respect to configuration and delivery. The OER community is a progressive group of educators and learners with decades of learning research to draw from, who know that we must prepare learners for an evolving and diverse reality. Despite this OER tends to replicate the unsuccessful characteristics of traditional education.

To remedy this we may need to remember the importance of imperfection, mistakes, problems, disagreement, and the incomplete for engaged learning, and relinquish our notions of perfection, acknowledging that learners learn differently and we need diverse learners. We must stretch our perceptions of quality and provide mechanisms for engaging the incredible pool of educators globally to fulfill the promise of inclusive education.

Keywords

inclusive design, deep learning, marginalized learners, global network, collaborative production, accessibility, FLOE project

OER commitments and Wabi-Sabi

A resounding commitment expressed by the Open Education Resource (OER) community this year is to "cross the chasm" toward broad adoption and sustainability and thereby become part of the mainstream of education (Vuchic, Chow, 2010). To achieve this we must garner broader participation, both in implementing and contributing resources. We must also address the needs of a greater diversity of learners, both to meet policy and legislative requirements (e.g., accessibility legislation), and to recruit a large untapped group of participants. Meeting these two objectives may initiate a virtuous cycle, in that a larger, more diverse group of contributors will result in a more diverse pool of resources that can then meet the needs of a greater diversity of learners. An essential prerequisite of meeting this commitment is a system that is inviting of contribution from a greater number and diversity of participants.

A second commitment is to support deep learning. This implies a fundamental departure from conventional or comfortable educational practices and a complete retooling of habitual educational quality judgments. Fortuitously, the two commitments are complementary.

As a step toward achieving these two commitments we must ask what currently prevents broader participation and how must we change OERs and OER delivery to support deeper learning. A worldview that is little known in the West but familiar to Eastern sensibilities may provide some insights into these two questions.

Wabi-Sabi is a Japanese worldview and aesthetic that recognizes the beauty in the imperfect, impermanent and incomplete. "[Wabi-sabi] nurtures all that is authentic by acknowledging three simple realities: nothing lasts, nothing is finished, and nothing is perfect."(Powell, 2004) It also encompasses the beauty of things modest, humble and unconventional.

Wabi-Sabi and learning design

You may ask what does appreciating imperfection, impermanence and incompleteness have to do with learning and OER adoption. Like many fellow parents I have watched my children abandon high-cost, perfectly polished educational toys for makeshift toys made from random articles and what we would call garbage. Cardboard-box castles held more appeal than Disney's take on math. Geometry was learned from popsicle sticks rather than the latest animation. The "perfect" toys were less likely to encourage engaged, resourceful or inquisitive minds.

As educators we are aware of daily phenomena that show that the incomplete invites completion, the broken invites fixing, mistakes invite correction and a partial collection of examples invites more examples. Humans call forth the greatest resourcefulness and creativity when there is an immediate and urgent unsolved problem. The best arguments and explanations arise from disagreement and debate. We know that cognitive dissonance and exposure to the counterintuitive spurs growth. We are aware of the value of constructivist learning.

However, we frequently fail to integrate this intuitive knowledge into our teaching practices. My son once responded to me when I admonished him to think about a problem "mom I don't have to think about it, the textbook gives me the right answer." My daughter when I asked her about a haphazard picture of a horse, far below her usual standard, explained that she could never draw the horse as perfectly as the teacher so why should she even try. Robert Fulghum's (1998) book "All I Really Need to Know I Learned in Kindergarten," may be more applicable to the educator who would relearn how to turn on inquisitive minds from learners who are mercilessly candid and not yet compliant.

We are resistant to apply what we intuitively know about the value of Wabi-Sabi learning to formal education. Is formal education not about setting standards and supplying models of perfection for the student and supporting them in striving toward those standards? Should we not aim to provide curriculum that is without mistakes? Surely we don't want to abandon quality? The Wabi-Sabi worldview promotes the recognition that everything is imperfect and everything changes, even our notion of perfection. I would argue that the benchmarks for perfection in our curriculum can act as impediments to continuous improvement. Expanding on Voltaire's assertion that the perfect is the enemy of the good, I would argue that the perception and acknowledgement of imperfection powers the continuous move toward improvement and thereby sustains quality far better than the most foolproof and trusted certification of quality. What is perceived as perfect repels efforts to improve and becomes outdated and impoverished.

Although, as OER educators, we know these principles of Wabi-Sabi from experience, the quality standards used to judge OER do not include imperfection, incompleteness, impermanence, disagreement or dissonance, or their more positive articulations. In creating OER we frequently:

- create the digital equivalent of the "sage on the stage,"
- focus our energy on polished delivery not learner engagement,
- use inflexible proprietary file formats that confound the creation of derivatives,
- fail to support bidirectional communication,
- do not support peer learning,
- ignore the need for critical thinking, and
- fail to accommodate translation into other languages and other modalities and delivery on diverse platforms.

It must be acknowledged that OER is the "new kid on the block" and as such needs to try harder to be perceived as worthy to overcome skepticism, inertia and distrust. However mimicking the status quo in traditional education may help us to blend in but will not help us to advance education.

Wabi-Sabi, Deep Learning and Marginalized Learners

The OER community and most education systems have acknowledged that the learning context has undergone a radical shift in the past two decades, requiring a corresponding shift in the approach to education. In a knowledge economy, education and the full development of human capital becomes

ever more critical. The prosperity of a society rests in large part on the educational development of its members. The emergence of the digital economy brings with it a major upheaval in the goals or required outcomes of education. Digitization is freeing us from the need to mass-produce the equivalent of human calculators, human hard drives or standardized human robots to staff our factories or offices. As has been outlined in many discussions of learning transformation (including 21st century learning), the new skills and knowledge of value are creativity, resourcefulness, flexibility, collaboration, communication, critical thinking and independent thought [21st Century Learning Initiative, 2010]. Unfortunately most education systems globally have not been retooled to nurture these skills or knowledge.

Another related motivation for retooling our education system, that the OER community has committed to help address, is the high level of educational drop-out in the United States and elsewhere. We have heard that students feel disenfranchised, do not see education as relevant, see the system as too inflexible and do not feel that their needs are being recognized or met. The learner most in need of a new approach to education is the marginalized learner. To heighten the urgency of this challenge, we are repeatedly reaffirming that sustainable prosperity can only be achieved when that prosperity includes all members of society [Martin Prosperity Institute, 2010]. This implies that learning must be inclusive. A successful economy must insure that no members are marginalized or excluded from education and employment.

Drop-out and marginalization are at least in part due to our overemphasis on inflexible standards of perfection – both in the curriculum and in the students we strive to produce. If our goal is to optimize learning for all learners we must recognize that learners learn differently. There is neither a single take on learning nor a best way to teach a concept. Learning outcomes research shows that learners learn best when the learning experience is personalized to their learning needs. Learning breakdown and drop out occurs when students face barriers to learning, feel disadvantaged by the learning experience offered or feel that their personal learning needs are ignored [CAST, Pearson Education, 2009].

OER has the advantage of being "born-digital" and can therefore harness the potential mutability or plasticity of digital delivery systems and digital content to assist in addressing the diversity of learning needs. Unfortunately many of our resources are not designed to take advantage of this plasticity and constrain the flexibility needed to tailor the experience to diverse learners.

Broader adoption through broader contribution

OER has the ingredients and foundational mechanisms to create the richly varied pool of resources needed to address the diverse needs of learners, thereby producing the variety of skills and knowledge needed in today's reality. OER at its heart is about pooling and sharing educational resources, about cumulative production and collaborative effort. However our notions of perfection and the need for constrained standards of quality have severely curtailed the power and size of our networked community.

OER must strive to be more like a barn raising or potluck meal than a formal carefully organized dinner party. The former is frequently more enjoyable and far more sustainable. Curriculum units

released through OCW say to the world "come partake of the best education." They do not invite participation or contributions. They do not encourage derivatives, tinkering or refinement. This means that a vast pool of possible adopters and contributors are reluctant to engage. Worldwide adoption must be based on more than worldwide consumption of OER. The necessary sense of ownership and inclusion in the process requires the commitment and a sense of shared responsibility that only comes from providing valued contributions. To unleash this potential we need to invite and make it easy to contribute variants and alternatives.

OER and inclusive education

OER has tremendous potential to meet the needs of a growing group of un-served learners who experience disabilities. Serving this group of learners will also remove barriers to OER adoption. Most countries, states and educational institutions have committed to provide equal access to education for students classified as requiring special education [United Nations, 2010]. All educational institutions in the United States, Canada and the European Union, for example, are governed by policies that require that curriculum be accessible to learners recognized as having a disability. Many of these policies are currently based upon a somewhat restrictive definition of disability and accessibility. Accessibility in formal education in the United States has become a large and complex framework focused on policy compliance and specialized service delivery. Students must qualify and resources must comply to a fixed binary notion of disability and accessibility – to constrain special service expenditures and to enable compliance monitoring and enforcement.

While OERs seem like a perfect mechanism for addressing the needs of learners requiring alternative access means, most Open Education Resources (OERs) are not designed to be accessible for learners with disabilities, most OER producers or developers are not aware of how to create accessible OERs, and most OER delivery mechanisms (e.g., OER portals) present significant barriers to learners using alternative access systems [Rush, 2010]. Consequently OERs do not meet legislative requirements in many countries.

One of the reasons for this situation may be that the formal accessibility framework adopted by many jurisdictions in high-income countries has received a less than welcoming reaction from the OER community. The reasons for this include:

- Accessibility is seen to constrain creativity and innovation in both technological and pedagogical approaches, it is seen to be counter to interactivity or more engaging learning experiences,
- OER creators are not aware of learners with the constrained set of qualifying disabilities among their user group,
- the OER movement is dependent on voluntary participation which tends to be less responsive to enforced standards, and
- the guidelines for complying are seen to be too complex and confusing and in some cases impossible to achieve.

The pervasive and well-entrenched accessibility framework and the reaction it has engendered in the OER community have acted as an impediment to adoption of OER as a curriculum alternative in

many formal education systems. These education systems fear litigation or other consequences of non-compliance with accessibility policy. This situation is unfortunate as the fundamental principles and motivations of OER and Accessibility are well aligned (inclusion, respect for diversity, equal access, open access, freedom to share and refine, etc.). More importantly the reforms required to achieve the OER community's vision of learning and education are the same reforms required to achieve the ultimate goals of accessibility (reforms to Digital Rights Management and Intellectual Property, move to digital content and delivery, recognition of the diversity of learners, learner choice, recognition of alternative learning delivery models, focus on deep learning, inclusive education). The two communities should be strong allies but find themselves relegated to opposite sides of a number of policy and advocacy debates.

The traditional approach to addressing the challenge of OER accessibility would be to modify all OERs and OER sites to meet a fixed set of accessibility criteria such as the Web Content Accessibility Guidelines, WCAG 2.0 (W3C, 2010). However there are several problems with this approach. There are a vast number of OERs, many of which are not amenable to modifying to meet WCAG 2.0. The time and resources required to modify all of the resources would be prohibitive. This approach provides a one-size-fits-all solution and does not recognize the full diversity of learners. The retrofit may compromise the learning experience for many learners. The approach would restrict the types of technologies, technical advances and range of interactive experiences that can be used in creating OERs for fear of contravening the accessibility criteria.

More significantly this traditional digital resource accessibility approach and the underlying policies and services that are based on fixed, binary notions of disability and accessibility do not serve the needs of learners with disabilities. This approach and framing:

− excludes learners that do not fit the categories (notably, learners with disabilities have less degrees of freedom or flexibility to fit assigned classifications and are therefore more likely to "fall between the cracks"; in addition there are many learners who do not qualify as having a disability but would benefit from or need alternative learning experiences),
− treats learners with disabilities as a homogeneous group when they are in fact the most heterogeneous group of learners,
− classifies learners based on a single parameter, ignoring the multiplicity of needs and skills that affect learning,
− constrains the design of learning resources thereby giving less leeway to address minority needs and non-normative learning styles or approaches faced by people with disabilities, and
− compromise the learning experience for many of the learners the services are intended to serve (e.g., learners with disabilities relying on visual learning).

The fixed binary definitions also encourage specialized, segregated services for people with disabilities (i.e., they serve to "ghettoize" education for students with disabilities). This makes these services less sustainable (more vulnerable to funding cuts, open to the whims of shifting funding priorities, peripheral to mainstream efforts and investments, etc.) and more costly (duplicating services found in the mainstream)[United States Dept. of Ed., 2002].

There is another frequently missed casualty of the traditional special education framework. The implementation and interpretation of accessibility legislation intended to support inclusion has become exclusive and narrowly defined. This is in part due to the pressure to contain costs and

create a testable legislative compliance mechanism. Unfortunately this creates a large group of doubly marginalized learners. These learners are not served by mainstream education nor by service enhancements and programs intended to serve learners with disabilities. This includes children whose families or support mechanisms do not have the financial resources, administrative savvy or advocacy skills to enable the child to qualify for special services. It includes learners who do not fit the narrow classifications of disability, especially as it relates to learning or cognitive disabilities. It includes students who only receive attention once it is too late, once they have become a "disciplinary" or "behavior problem."

In response to this dilemma a number of research and standards efforts have proposed a relative framing of disability and accessibility recognizing the range of human diversity [Treviranus, Roberts, 2006]. All learners potentially face barriers to learning. Like barriers faced by people with disabilities these can be seen as a product of a mismatch between the needs of the learner and the learning experience and environment. Learning needs that affect learning can include:

− sensory, motor, cognitive, emotional and social constraints,
− individual learning styles and approaches,
− linguistic or cultural preferences,
− technical, financial or environmental constraints.

Using this framing an accessible learning experience is a learning experience that matches the needs of the individual learner or the learners within a group. Thus a resource cannot be labeled as accessible or inaccessible until we know the context and the learner/s. This aligns well with OER best practices, learning outcomes research and evidence regarding good pedagogy in OER-based education. This framing merely adds an additional critical impetus to the broader goals and values of the OER community. The added push recognizes that some learners are more constrained than others and are therefore less able to adapt to the learning experience or environment offered, with the result that the learning environment or experience must be more flexible.

To achieve an accessible or inclusively designed OER system requires the capacity to match the learning needs of individual learners. This requires OER resources that are amenable to reuse, and a large, diverse pool of OERs. If the default OER is inaccessible to a specific learner the delivery system would either:

1. transform the resource (e.g., through styling mechanisms),
2. augment the resource (e.g., by adding captioning to video), or
3. replace the resource with another resource that addresses the same learning goals but matches the learner's specific access needs.

To achieve this requires:

1. information about each learner's access needs,
2. information about the learner needs addressed by each resource,
3. resources that are amenable to transformation, and a pool of alternative equivalent resources, and
4. a method of matching learner needs with the appropriate learning experience.

A new initiative supported by the William and Flora Hewlett Foundation, the FLOE (Flexible Learning for Open Education) project creating the conditions needed to enable this approach to inclusive learning. FLOE leverages many years of work in Canada and internationally. The Connecting Canadians Initiative, which prioritized inclusive design, supported a large body of research into learning object repositories (which can be said to be the precursors of Open Education Resources) [Anderson, 2006]. This led to the creation of a number of foundational technologies and practices to support inclusive online learning such as Web4All and AccessForAll. AccessForAll is both an open international interoperability standard and a number of open source implementations for matching learning resources and learning delivery systems to meet the individual needs of learners. AccessForAll has been implemented in projects and services such as TILE (The Inclusive Learning Exchange), TransformAble, ATutor, the Angel Learning Management System, EU4All, Teacher's Domain and the K12 Library. These implementations have been used to refine both the standard and subsequent implementations [Treviranus and Roberts, 2007].

The approach to accessibility is based on the notion of designing for diversity and as such brings with it a host of associated benefits related to diversity, flexibility and adaptability in several realms. In many cases these are powerful motivators for adopting inclusive design principles that may be invoked if and when accessibility is not seen as a critical priority. Even when accessibility is seen as a requirement, these associated benefits can be added motivators for applying inclusive design principles. These associated benefits include: ease of internationalization and translation, OER portability across operating systems and browsers, ease of reuse, repurposing, and updating, improved discovery and selection of appropriate OER, and ease of delivery through a variety of mobile devices whether phones, smart phones, tablets or laptops. The project embeds inclusive design in the day to day OER workflow making inclusive design largely automatic and unconscious wherever possible and providing the supports and decision making tools to enable efficient and effective inclusive design where human judgment and effort are required.

Conclusions

To realize the full potential of OER we may need to learn from the Wabi-Sabi worldview and release attitudes and assumptions that hamper broader participation and constrain more inclusive education. Recognizing that learners learn differently, that diverse learners are needed in today's economy, and that to be sustainable we must invite and enable global contributions, the OER community must stretch perceptions of quality to more inclusive proportions.

Acknowledgements

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Jutta Treviranus is the Director of the Inclusive Design Research Centre (IDRC) and Inclusive Design Institute as well as full professor at OCAD University in Toronto http://inclusivedesign.ca. IDRC is an internationally-recognized center of expertise in the inclusive design of emerging information and communication technology and practices. Jutta has led many international multi-partner research networks that have created broadly implemented technical innovations that support inclusion. These include the Fluid Project (http://fluidproject.org) and the new project, Flexible Learning for Open Education (FLOE). Jutta and her team have pioneered personalization as an approach to accessibility in the digital domain and lead a number of successful international open source projects. She has played a leading role in developing accessibility legislation, standards and

specifications internationally (including WAI ATAG, IMS AccessForAll, ISO 24751, and AODA Information and Communication).

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