

Design Justice, Assessment and Artificial Intelligence

Justicia en el diseño, evaluación e inteligencia artificial

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Abstract

Our current education systems continue to foster and enable inequality and injustice. Education is designed for a different age and continues to be an instrument of human capital and social engineering. Reforming education to focus on equity, inclusion, and social justice is a growing imperative in complex, fast-changing societies. Using the principles of design justice, refocusing assessment and leveraging artificial intelligence to enable learning for all is explored with a focus on differentiated assessment.

Keywords: Design justice, assessment, artificial intelligence, equity, inclusion, backward design.

Resumen

Nuestros sistemas educativos actuales continúan fomentando y permitiendo la desigualdad y la injusticia. La educación está diseñada para una época diferente y sigue siendo un instrumento de capital humano e ingeniería social. Reformar la educación para centrarla en la equidad, la inclusión y la justicia social es un imperativo creciente en sociedades complejas y que cambian rápidamente. Se explora el uso de los principios de justicia de diseño, la reorientación de la evaluación y el aprovechamiento de la inteligencia artificial para permitir el aprendizaje para todos, centrándose en la idea de la evaluación diferenciada.

Palabras clave: Justicia en el diseño, evaluación, inteligencia artificial, equidad, inclusión, diseño retrospectivo.

The construct “design justice” speaks to the need for all educational activities – teaching, learning and assessment – to be deliberately and systematically created with equity, inclusion, and social justice as a driving requirement for the work of teachers and students. That is, equity and inclusion are not an “add-on” to curriculum or assessment but are fundamental requirements for the work teachers and educators do.

Design justice is an approach to learning and assessment design which seeks to challenge structural inequalities and advance collective liberation. In education, design justice involves rethinking pedagogical and assessment practices to be more inclusive, equitable, and just. The work associated with turning this thinking into action involves six key principles, especially as the construct relates to assessment:

1. Centering Marginalized Voices

Design justice emphasizes the need to center the voices and experiences of marginalized students in the assessment design process. This means actively involving students from diverse backgrounds in deciding what and how learning should be assessed. Their perspectives and needs should help shape assessment goals, methods, content, and formats. Rather than “one size



fits all,” it may lead to different approaches to assessment for different groups of students for the same assignment (Allah, 2023).

2. Questioning Dominant Norms

Design justice questions the dominant norms often uncritically embedded in assessment practices. For example, timed standardized tests may disadvantage students with disabilities or test anxiety. Strict due dates can disproportionately impact students balancing jobs, families, and other responsibilities. Design justice asks us to reconsider "one-size-fits-all" assessment approaches (Gare, 2023).

3. Distributing Benefits Equitably

Well-designed assessments should distribute benefits equitably to students. Assessments should play a supportive role in learning rather than sorting or filtering students. Design justice also means assessments should not create disproportionate burdens for disadvantaged students (Zhou, 2023).

4. Fostering Agency and Ownership

Design justice assessment provides students more agency in demonstrating their learning. This can involve choices in assessment formats, topics, timing, or weighting. Shared ownership over assessment criteria and self-evaluation are also key. The aim is to empower marginalized students and build their capacity as assessors of learning. This may lead to the greater use of peer review and assessment, more critical self-assessment and an increased use of formative assessment (Beck & Jones, 2023).

5. Enabling Diverse Contributions

Design justice assessments make space for diverse modes of expression and contribution. Oral presentations, portfolios, self-reflection, and group projects may complement or replace standardized written tests or examinations. The emphasis is on creating multiple pathways for students to demonstrate their learning meaningfully, using the processes and methods that best reflect who they are and their learning journey (Bose, 2023).

6. Promoting Pluralism

Design justice promotes assessment pluralism - utilizing a diversity of methods to build a holistic picture of student learning. Various approaches can elicit different insights about students' developing understandings, skills, and capabilities. Pluralism also means valuing diverse cultural knowledge and ways of knowing (Kumar & Maurya, 2023).

Design justice implies taking a slower, more circumspect, and self-aware approach to all learning and assessment design. This is essential to meet their intended aims of equitably enabling, supporting, and capturing student learning and providing feedback to enable learners to flourish and achieve their potential (McLaughlin, 2021).

New Thinking About Teaching, Learning and Assessment

Murgatroyd (2023), following Freire (1970), suggests that traditional approaches to teaching and assessment are a form of banking. Teacher's "deposit" knowledge, and the student is expected to invest time and energy in mastering that knowledge and then re-presents that knowledge back to the teacher in summative assessments, such as multiple-choice tests, essays or examinations.

Freire's critique of the banking approach led to his suggestion that critical-reflective learning undertaken in the context of mutual respect and collaboration can lead to significant individual and collective learning outcomes. More specifically, his work led to the suggestion that education can be used as an instrument for social justice through design. He based his thinking on these observations:

1. **Education is never neutral:** it either maintains the current system of domination or it is designed to liberate people.
2. **Relevance:** Schools, teachers and learners learn best when what they are learning engages with issues that people care deeply about.
3. **Problem-posing:** all participants can think, question, and act. The more we challenge students to engage and work with real-world, "wicked problems" (Murgatroyd, XX), the more students will engage and learn.
4. **Dialogue:** no one knows everything, but together we know a lot, if we listen to each other. Therefore, the key task of the teacher is to act as a facilitator, guide, coach and provocateur to enable quality exploration and dialogue.
5. **Praxis:** real learning takes place through the cycle of reflection and action aimed at having a genuine and sustainable impact. Passive learning does not achieve these kinds of outcomes.
6. **Transformation:** The purpose of education is to engage communities to transform individuals, communities, the environment, and the broader society so that each person can achieve their purpose and find meaning, while giving back value to their community. The purpose moves us beyond "grades" and "outcomes" into impacts and actions for success.

To make such learning possible, especially in increasingly complex classrooms where a variety of students with different cultural backgrounds, skills and understanding (Badley & Patrick, 2022) interact with teachers with an increasingly limited scope of professional practice (Buchanan, 2020; de Saxe et al., 2020) and a growing sense of moral distress (Dacerova & Bartosova, 2020), teachers leverage constructivist pedagogy (Richardson, 2003). In such pedagogy, teachers act as facilitators to help students achieve their own learning goals using problem-based and project-based learning.

Problem-based learning works best when problems are part of larger, ideally real-world tasks; learners are supported to take ownership of the problem; the task is appropriate to the learner's level of understanding and ability; the learner must reflect on what is being learned and how they learned it; and the educator encourages the learner to test their ideas in various contexts. Students develop both cognitive and affective skills and capabilities and engage in authentic work, which best prepares them for the work of active citizens and engaging future employees or entrepreneurs.

Authentic Assessment and Design Justice

Authentic assessment and design justice share common goals of promoting equity, inclusion, and empowerment in education. Authentic assessments aims to provide students with meaningful, relevant tasks that demonstrate real-world learning and enable the learner to understand where they are on their learning journey. Several key links exist between authentic assessment and design justice:

- Both question standardized, one-size-fits-all assessments that can disadvantage diverse students. Authentic tasks allow multiple modes of expression tailored to students' strengths and needs. Rather than focusing on the form of assessment, the task is to focus on ensuring that the learner is able to demonstrate their learning in ways that are appropriate for them.
- Authentic assessments promote student agency, ownership, and identity investment by allowing choice in how they demonstrate learning. This aligns with design justice principles of fostering agency and capacity building.
- Authentic assessment values diverse cultural knowledge and ways of knowing, just as design justice calls for pluralism and recognizing non-dominant contributions. An Indigenous learner may chose an allegorical story to demonstrate their knowledge and understanding while a student with a different cultural background may use mathematical formulation to show the same learning.
- Authentic assessment aims to empower students as assessors of their own learning, like design justice goals of distributing assessment benefits equitably. This encourages and enables self-reflection and supports peer review and assessment as a standard classroom practice.
- Both authentic assessment and design justice question the value of assessments act as gatekeepers and sorting mechanisms. The emphasis is on supporting learning rather than labelling deficits or classifying students by grades.

In reimaging assessment for justice, there is a need to focus on meaningful, relavant authentic assessment.

Implications for Practice

One clear implication of this thinking is that students need multiple routes and choices in how they are assessed. Rather than giving one standard assessment for all, students need choices about the mode of assessment. Some may choose to submit a video, others a text and others a set of images with narratives explaining how the images connect to the key idea they are exploring. What needs to be clear is how the assessment will be reviewed – the rubrics need to be explicit, even though the rubrics may be applied to different kinds of student work.

A second implication is that the process of assessment needs to be negotiated. Rather than imposing an assessment regime on all students, the teacher explores the ways in which particular forms of learning are to be assessed with their students so that they have ownership of the process of assessment. This promotes student agency and the student voice (Bain, 2010; Kramer, 2023).

A third implication is that all assessment should involve components of critical self-reflection (what I learned about myself as a learner as a result of doing this work) and self-evaluation (I judge this work to be..) as well as assessment of knowledge, skills, competencies

and capabilities. For example, in offering an analysis of *Wuthering Heights*, the learner may also explore what the student learned about the work of analysis through this assignment.

A fourth implication is that the balance between formative assessment (an assessment aimed at enabling learning through feedback) and summative assessment (an evaluative judgment) may need to change to favour more formative and fewer summative assessments (Hickey et.al., 2006). More learning and personal growth and development may be enabled by focusing more on learning than judging and reducing the high-stakes testing activities experienced by students.

A final implication of this emphasis on design justice is to connect assessment activities to the culture and experience of the student more directly. Even with something as seemingly “objective” as mathematics, showing how mathematics is used in the community of which the student is a part – at the Church, Mosque, Synagogue, in judo, at a hospital or coffee shop, pottery or another setting the student experiences – can make a difference to how the student connects to the mathematics they are studying (Scott et al., 2018).

McLaughlin (2021) gives examples of the way in which these kinds of assessments can be created across a variety of disciplines. For example, for Grade 7 mathematics, he suggests activities like writing to a legislator to encourage them to draft legislation that minimizes intersectional, gender or race bias in housing loan interest rates based on the students assessment of the evidence relating to proportional relationships in ratio and percentage problems for different groups of mortgage holders (p 241). The class is asked to explore the nature of mortgages, how different rates are calculated for different borrowers and different locations. Other assessments in mathematics can be used to look at health outcomes, economic well-being and other issues of social justice.

What makes these actions difficult is the growing use of standardized high-stakes testing for education system accountability (Puspitasari & Pelawi, 2023) and policy-making – moves encouraged using the OECD Program of International Student Assessment (PISA). The human capital and market view of students and schools promoted by the OECD sees curriculum and assessment as instruments of markets and economies. This gets in the way of design justice and authentic assessment as drivers for educational activities and learning. Rather than enabling and supporting individual and collective growth, social engagement and learning for impact, high-stakes standardized tests become mechanisms of control and suppression (Bamberger et al., 2019).

The Potential of AI as a Disruptor of Assessment and Enabler of Design Justice

Since the arrival of ChatGPT in November 2022, the issues of plagiarism and academic misconduct have been at the forefront of educational discussions of AI, to the detriment of the use and experimentation using AI tools (Cotton et al., 2023). AI holds significant promise for a renaissance in assessment and as an enabler of design justice and differentiated assessment practices.

There are several ways in which AI tools can be used to support design justice (Huggins-Manley et al., 2022; Swiecki et al., 2022). These include:

1. **Personalized assessments:** AI algorithms can analyze student data and learning patterns to create customized assessments tailored to each student's needs, abilities, interests, and learning styles. This enables a more equitable evaluation of student knowledge, skills, and capabilities.

2. **Adaptive assessment:** AI systems can adjust the difficulty level and sequence of assessments based on a student's performance. This ensures students are appropriately challenged and can reduce anxiety or frustration.

3. **Automated accommodations:** AI can help accommodate students with disabilities, language difficulties or different approaches to problem-solving. This allows equal access and opportunity to demonstrate learning. Indeed, differentiated assessment is at the heart of design justice as an instructional practice.

4. **Bias detection:** AI can analyze assessment data to detect potential biases and ensure fairness across student groups related to race, gender, disability status, etc. Problematic assessment questions or scoring algorithms can be identified and addressed.

5. **Automated scoring:** AI scoring engines can reduce human bias and inconsistency in evaluating subjective test responses. This does require that the data used to train the AI systems must be screened for fairness and representation of diverse groups and be constantly updated to reflect emerging knowledge and understanding.

6. **Analysis for continuous improvement:** AI analytics enable detailed analysis of assessment data to continuously evaluate and enhance the quality, validity, and fairness of assessments. Any issues can be quickly identified and resolved.

As AI applications develop and become more sophisticated, multimedia assignments and automated assessments will develop and enable new approaches to learner feedback and capability development. While in-built bias is a current issue with certain large language generative AI models, bias will become less of an issue as the models learn and become increasingly capable of bias detection and correction (Pennefather, 2023).

CONCLUSIÓN

Many educational outcomes of our current education systems reinforce injustice and social status (Piketty, 2022). David Berliner observed some time ago (Berliner, 2015) that the OECD's PISA data is as much about social class and economic status as it is about educational performance. So as to embed social justice, equity and inclusion into our educational system, change is needed. Design justice provides a starting point for such change, especially when focused on how we assess students.

What is needed now is the deployment of what is known as "backward design" (Kang, et al., 2019) to be applied to all aspects of teaching and learning. Starting from differentiated assessments, how would we reimagine the work of teaching and learning to embed social justice, impact-based learning and inclusion in our work? It is a driving question that urgently needs to be addressed (UNICEF, 2018; Cobbold, 2023; Jensen et al., 2023).

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