When technology does not solve the problem. A Review of “The Charisma Machine” by Morgan G. Ames

SUBMISSION DATE / POSTED DATE

20-04-2023 / 26-04-2023

CITATION

Nnamani, Manee Ngozi (2023): When technology does not solve the problem. A Review of “The Charisma Machine” by Morgan G. Ames. TechRxiv. Preprint. https://doi.org/10.36227/techrxiv.22669891.v1

DOI

10.36227/techrxiv.22669891.v1

Manee Ngozi M Nnamani

When technology does not solve the problem. A Review of "The Charisma Machine" by Morgan G. Ames

Introduction

Although the world has progressed in absolute and relative numbers of schoolchildren, the differences between the richest and the poorest and between rural and urban populations have not decreased. (Schmelkes, 2020). Education inequity is a huge problem that continues to exist worldwide, especially in developing countries, despite the many promising interventions adopted with the hope of closing the divide.. Some authors believe this may result from inadequate policies towards achieving just societies (Schmelkes, 2020). The dynamics that play out between a technological intervention to create equity and the cultural components of a community is narrated in the book, "The Charisma Machine", through the lens of the One Laptop Per Child (OLPC) initiative. This book review summarises the book's main arguments and suggests some design principles, which could have been adopted by the contributors of the project for a better outcome.

Plot Summary

The One Laptop Per Child Project - OLPC project was built on the theories of constructionism, developed by Seymour Papert four decades before the OLPC project (Ames, 2019). The theory affirms that the learning process is one in which students construct knowledge through hands-on, creative projects and problem-solving activities (Han & Bhattacharya, 2001). The charisma of the OLPC project, rooted in this learning theory projected that by making technology available and accessible to every child, in the form of a Computer called the XO, they would already be on a pedestal to learn and in the long run, be emancipated from technological ignorance; would be able to program and solve technical problems, even without being taught how to do so.

The first two chapters provide a history behind the One Laptop Per Child Project - OLPC, describing how the founder, Nicholas Negroponte, was inspired by the vision (rooted in constructionism) that just giving a computer to a child was enough to educate the child. In 2006, the NGO, One Laptop per Child was formed while the founder travelled the world, giving talks at important fora and organisations about the charisma of this machine. One of which was a TED talk in 2006, where he responded to concerns about large-scale deployment with these words: "The days of pilot projects are over. When people say, 'Well, we'd like to do three or four thousand in our country to see how it works.' Screw you. Go to the back of the line, and someone else will do it, and then when you figure out that this works, you can join as well."(Negroponte, 2006). He succeeded in convincing the United Nations about the viability of this project and received backing from some top tech companies like RedHat, Google, Quanta and Chei Mei.

The subsequent chapters narrate its implementation in two phases in Paraguay, and the project's outcome. The political situation in the country was of significant importance at time of its launch. The liberal candidate, Fernando Lugo, had just won the presidential election in 2008. His message of hope during the campaign was

centred on reducing Paraguay's widespread inequalities and corruption. Hence, facilitating the proposal from an NGO, Paraguay Educa, founded by Raul Gutierrez and Cecilia Rodriguez Alcala, both of whom had previous ties with the OLPC project because of their affiliations with the MIT Media Lab. The former was very connected with the Vice President (a friend of his Father). Being influentially linked and tied, they enjoyed good press coverage from ABC Color, one of Paraguay's major newspapers.

The first major flaw was the pricing of the laptop. Although Negroponte had promised that these laptops would cost $100, the price of the XO never dropped below $188 per unit(Ames, 2019), and as such, Paraguay Educa began seeking external funding for its first batch. As the project progressed, it was seen that interests in the students were not sparked as expected, thus, challenging the assumptions that OLPC had made about the Global South and their expected reaction to the device. It disrupted the classrooms due to issues ranging from hardware (power, battery and physical damage) to software (viruses, difficulty in installing applications and missing software). Unfortunately, the students didn't show interest in fixing the laptops as earlier predicted by Negroponte. When the project moved on to the next phase, the desired outcome was still not achieved even after some flaws identified in the first phase were corrected..

The OLPC project was not an absolute failure; the book accounts for a few cases of children who benefitted from it; learned to program and got a path to promising opportunities opened up for them. One such is the story of two siblings, Manuelo and Elisa. Further observation and study about their lives and their family circumstances revealed that they had a lot of support, direction and encouragement from their parents, especially their mother, who was a teacher, and this was the driving force that pushed them to surpass and challenge themselves to use the XO computers creatively. So even in cases where the OLPC initiative appeared to be a success, instead of closing the equity gap, it contributed in some way towards widening it.

Some Design Principles for Successful Education Technology Interventions

Western designers need to critically understand the historical processes and intellectual or theoretical traditions that structure the situations they analyse (Winschiers-Theophilus & Bidwell, 2013). Most countries are very diverse (Schmelkes, 2020), especially non-western ones or those classified as the Global South. When an intervention is designed and made the same for everyone in these countries, it has a high potential of failure as it can be complex to cater for their rich diversity. Many lessons from Morgan G Ames' book point to why this initiative failed, which can be applied as lessons for similar interventions in the same or broader contexts. Highlighted below are some design principles/approaches that could have been explored deeper in the OLPC initiative, and which might have paved the way for success for them..

User-Centred Design: This is sometimes called the iterative or human-centred approach. As the name suggests, this approach involves getting users to play an active role inf the design process. Sometimes, this could be formative -iinvolving users early in the process and continually, or summative - involving users at various stages of finalised products/designs (Gabbard et al., 1999). During the presentation to the United Nations, Nicholas Negroponte says: "We will not launch this without 5 to 10 million units in the first run…we will do it by going to seven large countries" (Negroponte, 2006). This suggests that users were not included in a formative or summative way. The OLPC initiative was deployed on a large scale, which perhaps accounts for its

lack of sustainability in the long run. Negroponte's approach of targeting seven large countries may also overlook the diverse needs and cultural contexts of different communities, potentially leading to a one-size-fits-all solution that does not address the specific challenges individual users face.

Humanistic-Centred Design: An attempt to undertake a situation or work that is somehow confusing; to do so holistically, bring clarity to it, and do so in a way that is oriented towards emancipatory change (Bardzell & Bardzell, 2016). Humanistic-Centered design involves four main dimensions: history and traditions, correct interpretation of situations, social action and emancipation (Bardzell & Bardzell, 2016). Traditions "live" both through contemporary thoughts and actions and also by inherited structures (Yesilkagit, 2010). The OLPC project was founded on the assumption that the children will initiate and direct their own learning, not by a teacher or an assignment (Ames, 2019). While self-directed learning can be effective, a structured environment is still necessary. Recognising teachers' and parents' roles within a learning institution or family structure in facilitating learning is essential. Ames shares an anecdote about two successful users of the XO machine, whose success was attributed to their mother's active involvement in supporting their learning. Although the XO Computers emancipated them, and they got creative using them, their mother created some kind of structure that made this happen. Brennan (2013), a known constructionist, explains that "eliminating structure does not ideally support learning, as the structure can benefit learners in their development as individuals capable of defining and pursuing learning goals". In addition, the sociocultural context and customs of the beneficiaries of the OLPC initiative in Paraguay were very different from that of the project manager. In addition, the Paraguayan people had several intra-cultural differences, which the OLPC team could not capture in their intervention, as they had only one perxpective of the people of Paraguay, as poor, uneducated and unexposed.. Chimamanda Ngozi Adichie laments the danger of a single-sided story in one of her TED Talks. She describes it as telling another person's story and making it the definitive account of that person (Adichie, 2009). When designing a socio-technical intervention, conducting thorough research and engaging with the local community is crucial to ensure that the project aligns with the social and cultural context in which it will be implemented (Selbst et al., 2019). Relying solely on a broad vision will not suffice, as seen in the case of OLPC. The members of the NGO that implemented the project, Paraguay Educa, were from the cosmopolitan crust of Paraguay and therefore were familiar with the social imagination of the OLPC (Ames, 2019) but not with the day-to-day realities of the Paraguayan community. The OLPC project fell victim to a single-sided story, with a narrow view of the people of Paraguay and their needs, as evidenced by the failure of the OLPC project to address the needs of students who already had access to computers. For instance, 15% of the students never caught on with the XO computers because they had computers in their households and couldn't stand the slow processing and the limited memory of the XO (Ames, 2019).

Participatory Design: A design intervention approach involving organising activities such that users, researchers and designers collaborate to achieve a shared objective (Bødker et al., 2022). It appears from the account in the book that these various stakeholders were not all on the same page in the design of the OLPC initiative. Ames (2019) research analysis revealed that 50% of the broken laptops belonged to students from rural areas. These students, who typically had longer walks home and spent more time outdoors, often used the

laptops while standing, making them more susceptible to damage. There were also reports in the book of how teachers struggled to integrate the use of the XO Computers within the classroom - it ended up disrupting classes. Perhaps if the participatory design approach was adopted, some of these user-specific habits, processes and contexts could have been factored into the design of the Computers and in the process of training the teachers. For instance, they could have built sturdier laptops, knowing that some of the students travelled rough roads before and after school, different from the ideal life of their peers in the Western world.

Analysis

"The Charisma Machine" provides a detailed account of the research methods utilised to write the book. From the point of view of triangulation, the book is comprehensive due to the use of multiple research methods and data sources, including OLPC's records and Paraguay Educa's reports. Qualitative data were gathered through classroom observations and interviews with OLPC contributors, teachers, students, and parents. The book's reliance on various sources and methods supports its claim as a comprehensive account of the OLPC project (Ames, 2019). The description of the research process adopted by the author makes allusions to efforts to overcome bias. For instance, in choosing teachers to participate in the interviews, they ensured that two categories of teachers were represented: one enthusiastic about the project and another not. For the transcription, they employed the services of local personnel to code and interpret the qualitative data. Good qualitative research emphasises learning and understanding the meanings people give to their world and experiences rather than making assumptions (Becker, 1996).

Although Morgan Ames does good research work that fosters credibility in the reader, her depiction of the OLPC project may be perceived as excessively critical, which could lead readers towards scepticism of educational technology initiatives in general and constructionism in particular. While it is widely acknowledged that the OLPC initiative failed to achieve its intended goals, it is important to note that the underlying principles of constructionism, and the aspiration to provide equal access to education for all children, are commendable. However, the book fails to capture the positive nuances of these principles and aspirations.

Conclusion

The failure observed in the OLPC project shows that good intentions are not sufficent for designing solutions for educational equity. Before trying or opting for a technological intervention, designers could reflect deeper together with the community they wish to emancipate in order to ascertain that what is needed is a technological invention. Should technology be adopted as the ideal solution, then it will be important to give priority of place to the process, which includes user participation/feedback, rigorous testing and continuous evaluation. Deployment on a smaller scale before complete roll-out, may be more effective in perfecting loopholes or design flaws identified in previous iterations. The Charisma Machine is a good read for technology designers and those seeking to adopt technology in their schools or implement/ design technological projects, as there are many lessons to learn therein. Some of the design approaches outlined above could help in ensuring that such initiatives are effective culturally and contextually. Sometimes, the solution may be less complex than we envisage as they could already be in existence within the communities we desire to emancipate.

References:

Ames, M. G. (2019). *The charisma machine: The life, death, and legacy of One Laptop per Child*. Mit Press.

Bardzell, J., & Bardzell, S. (2016). Humanistic HCI. *Interactions*, *23*(2), 20–29. https://doi.org/10.1145/2888576

Becker, H. S. (1996). *3 The Epistemology of Qualitative Research*.

Bødker, S., Dindler, C., Iversen, O. S., & Smith, R. C. (2022). *Participatory Design*. Springer International Publishing. https://doi.org/10.1007/978-3-031-02235-7

Brennan, K. A. (2013). *Best of both worlds: Issues of structure and agency in computational creation, in and out of school* [PhD Thesis]. Massachusetts Institute of Technology.

Gabbard, J. L., Hix, D., & Swan, J. E. (1999). User-centered design and evaluation of virtual environments. *IEEE Computer Graphics and Applications*, *19*(6), 51–59. https://doi.org/10.1109/38.799740

Han, S., & Bhattacharya, K. (2001). Constructionism, learning by design, and project based learning. *Emerging Perspectives on Learning, Teaching, and Technology*, 127–141.

Mikus, J., Grant-Smith, D., & Rieger, J. (2022). *Cultural Probes as a Carefully Curated Research Design Approach to Elicit Older Adult Lived Experience* [Chapter]. Social Justice Research Methods for Doctoral Research; IGI Global. https://doi.org/10.4018/978-1-7998-8479-8.ch009

Negroponte, N. (2006). *Nicholas Negroponte: One Laptop per Child | TED Talk*. https://www.ted.com/talks/nicholas_negroponte_one_laptop_per_child

Schmelkes, S. (2020). *Recognizing and Overcoming Inequity in Education*. United Nations; United Nations. https://www.un.org/en/un-chronicle/recognizing-and-overcoming-inequity-education

Winschiers-Theophilus, H., & Bidwell, NicolaJ. (2013). Toward an Afro-Centric Indigenous HCI Paradigm. *International Journal of Human-Computer Interaction*, *29*(4), 243–255. https://doi.org/10.1080/10447318.2013.765763

Yesilkagit, K. (2010). The Future of Administrative Tradition: Tradition as Ideas and Structure. In M. Painter & B. G. Peters (Eds.), *Tradition and Public Administration* (pp. 145–157). Palgrave Macmillan UK. https://doi.org/10.1057/9780230289635_11