

About change: how institutionally aligning online pedagogy, design and technology impacts higher education teachers

Paula Charbonneau-Gowdy, Caro Galdames

Universidad Andres Bello, Santiago, Chile.

Abstract

Emerging empirical evidence in e-learning research is revealing the advantages of aligning learner-centred pedagogical practice with social learning-based instructional designs and appropriate interactive technologies to bring about systemic changes to learning online. This inquiry forms part of a larger qualitative action research study. Our aim was to determine the impact of such a cross institutional change initiative on a group of instructors, teaching in multi-disciplinarian fields in a higher education technical institute in Chile. Findings from questionnaires, field notes and in-depth faculty interviews revealed that evolvment towards teachers' roles as mediators and identities as empowered facilitators and community builders occurring over the initial years of the initiative were accompanied by encouraging signs of the development of 21st century skills and identities on the part of students. In our post pandemic era, as online learning becomes more the norm, understanding such effective pathways to excellence in digital spaces is paramount.

Keywords: *Higher education; distance learning; online instructional design; 21st century pedagogy; social interactive technologies; identity.*

1. Introduction

In the ‘new reality’ of the post pandemic era, more institutions than ever are incorporating online learning as a permanent offering in their programming. How do they avoid the well-documented pitfalls that befell many online learning contexts in the pivot to distance learning, and indeed even before (Zhang et al., 2022)? In recent decades, promising theories have emerged that seek to provide solutions for guaranteeing effective learning in online spaces. An ongoing debate around ways of connecting these theories with ‘real’ practice has surfaced as a result (Pange et al., 2011). More recently, scholars have argued that advances in creating this connection can be achieved by aligning instructional designs (ID) and pedagogical practices with contemporary learning theory and with the use of social media technologies in online settings (Picciano, 2017; Margaryan et al., 2015). Teachers are vital in these change processes. Knowing the voices of teachers from an institution that has managed to implement such an aligned ID/pedagogical practice /technology model (Charbonneau-Gowdy et al., 2022) could add valuable insight into the challenges teachers face in such change processes and the kinds of viable support mechanisms that are required for the theory/practice connection to be realized and effective online learning to be assured. Indeed, scholars examining the various levels of teachers’ preparedness and abilities in online spaces and the impact on learners (Vlachopoulos & Makri, 2021) are pointing to a paucity of research in this area.

Our study was intended to respond to this call. From 2020 to 2022, the Chilean technical institution we report on in the study launched a collaborative macro/meso/micro initiative to address inconsistencies in the frameworks of their distance learning programs. Institutional policies professed that programs were preparing students for the highly social workworlds in which they were inhabiting – contexts that require networking, strong communication skills, critical and innovative thinking in technical areas. Yet, in reality its programming emphasized students working online in individual silos accumulating information and being evaluated on their abilities to absorb and retain this knowledge. The change initiative, with the internal support and drive of one of the researchers, herself a senior administrator, involved taking concrete steps across all program areas to align online instructional designs, pedagogical practices and uses of technology with current 21st century social-learning based theory (Charbonneau-Gowdy, 2022). At the same time, teachers were supported in a process to transform their practices from an emphasis on content and evaluation of information retained, to one in which promoting learner agency, social learning through community building and the engaged use of interactive technologies, were integral. The aim of this study was to understand the experiences of teachers in this newly installed institutional trajectory. We focused on academic staff employed in the institution (n=73 of 150) during the period from 2020 to 2023 and how they related to the changes both in teaching and student learning that

they were being called upon to implement and promote. The following questions guided the inquiry:

1. In what way did this group of teachers relate to the new direction in online learning practices being established in the institution?
2. In their view, what changes, if any, did they find themselves making in their roles as teachers over this period?
3. What changes, if any, did they witness in learners' identities and practices?

2. Theoretical Underpinnings

With the experience that many in education have had online during the recent COVID-19 pandemic, few would dispute that the use of technology leads unquestionably to effective learning. For the last two decades, e-learning scholars have extolled the advantages and virtues of technology-based learning (Castro et al., 2019). Yet, it became clear during the pandemic that these claims presupposed certain contextual conditions – pedagogical, design-based and technological. Gathering from reviews of scholarship documenting educational experiences lived online during the pandemic, these conditions were in too many cases absent (Vlachopoulos et al., 2022). As Adinda et al. (2020) have stressed, it is only in the epistemological conformity of these conditions with contemporary learning theory and 21st century goals that effective online learning can be achieved.

Essentially, these theories and goals a) place learners and their agency at the centre of learning processes; b) are predicated on the understanding that learning is a complex social interactive phenomenon; c) involve learners in community collaborating on co-constructing knowledge based on their individual social contexts and experiences; and d) have important implications for learners' competencies and identities in a highly dynamic, technology-driven society (Charbonneau-Gowdy et al., 2019). It is evident that the roles teachers play in ensuring these kinds of scenarios for learners in their classrooms deviate substantially from traditional ones. The challenge has been how to support teachers in making the transition to these new roles.

In the last two decades, theorists in e-learning have proposed models to support teachers, and other stakeholders, in recognizing the importance of such practices and conditions in digital spaces (see Picciano, 2017). While each distinct, these theories share a common focus relevant to our study – that is, to advance the concept of online learning environments as spaces where teachers share a role with students in deliberating ideas, where social presence is evidenced through teacher/student engagement in discussion boards, blogs, wikis, and videoconferencing, where a teacher's aim is to promote knowledge construction and the development of abilities, including metacognitive ones, rather than the dissemination/assimilation of information, where teachers foster the collaboration of learners

to solve problems through discourse, and where their role is to be active facilitators and an essential part of the learning community (Picciano, 2017).

Theories can propose frameworks for effective teaching and learning online, yet recent studies show it is through solid instructional designs that closely reflect these contemporary e-learning theories that ‘real’ pedagogical practice can be impacted. A case in point, Margaryan et al. (2015) assessed the instructional design quality of 76 distance learning programs, (MOOC’s). They found the majority “faired poorly” in aligning contemporary theory-based design to online practice. The framework and key questions used in their analysis (Table 1) allowed us to draw inferences about the roles and pedagogical practices of teachers in our study.

Table 1: Framework for evaluating instructional designs used online (Margaryan et al., 2015).

Guiding Principle	Description
Problem-centred	Learners learn skills in the context of real-world problems
Activation	Learners activate their existing knowledge and skills for developing new skills
Demonstrated	Learners learn when exposed to “real” examples of new skills to be learned rather than information
Application	Learners have opportunities to apply their new skills to solve problems
Integration	Learners have opportunities to reflect on, discuss and defend their new skills
Collective knowledge	Learners contribute to collective knowledge
Collaboration	Learners collaborate with others to build knowledge
Differentiation	Learners have options according to their individual needs
Authentic resources	Learners are put in real world situations
Feedback	Learners are given regular feedback

3. Methodology

A qualitative participatory action research (PAR) methodology was chosen for the study for several reasons: i) the underlying incentive involved this approach to respond to challenges and the “potential in the approach to create meaningful and authentic change for those involved” (Barcelona, 2020, p. 9); ii) the emphasis the approach places on drawing together the macro, meso and micro levels of the institution, a critical component of sustained change

initiatives in online teaching and learning (Charbonneau-Gowdy et al., 2019); iii) its suitability for investigating complex human activity and for uncovering participant voices (Denizen et al. 2005).

3.1. Research Design

Table 2 illustrates the various overlapping phases of the study and the tools used to collect the data in each phase. These research phases coincided with the 3-pronged program changes in Instructional Design, technology tools and pedagogical practices to which teachers were in parallel adapting and in which they were playing a key role. Essentially, the institutional changes included: a) adding synchronous videoconferencing sessions in all courses for building learning communities; b) providing increased opportunities and resources for student collaboration on both learning assignments/projects and assessment processes; c) using group project-generated media as course content ; d) incorporating forums, padlets and career-designated community sites into courses for students to exchange ideas and opinions; e) creating separate institution-wide faculty and student online community sites.

3.2. Context and Participants

The study took place in Chile, considered an economically stable country one of only 2 members of OECD in South America, yet with deep socio-economic divisions and where a majority of citizens have unequal access to quality education. Teachers in general are poorly paid and lack employment stability resulting in a recent concerning national drop in interest in the profession. The institution where the study took place employs on average 150-200 faculty members – 46% permanent 54% non permanent, the latter contractual many of whom must supplement their incomes by teaching elsewhere. Students are all working adults, the majority from vulnerable disadvantaged backgrounds, both educational and economic.

The privately-owned technical institute, founded in 1985, has offered 100% online programs since 2017, one of few prior to the pandemic to do so. Technical courses are offered in 15 career streams organized in 5 areas: administration, education, industrial, health and social. Seventy-five teachers from a cross-section of these areas responded to the survey during Phase 4 of the study, and 9 of this group opted to participate in the in-depth interviews. Teachers' voices (n=105) were also represented in the various field notes collected over the phases of the study (Table 2). Participants represent 3 groups of experience – those with experience before and during changes, those employed at the outset of the change and those who joined in the second year of the process.

Table 2: Four phases of the study.

Phase	Type of Data	Description
<i>Phase 1: Introducing ideas for change:</i> September & October 2020	Field notes: Minutes of meeting	Collaborative discussions with representative teachers, heads of department and management on improvements to virtual classroom resources (n= 20)
<i>Phase 2: Bringing awareness to social learning in the online modality:</i> November 2020 to August 2021	Field notes: Documents	Teacher awareness-raising actions with information delivery (articles, infographics, capsules)
<i>Phase 3: Institutional trainings in relation to social learning in online modality:</i> November 2020 to December 2022	Field notes (2020): Minutes of meetings Field notes (2021): Meeting notes Digital correspondence	Online collaborative capacity development sessions with teachers (n = 60) <ul style="list-style-type: none"> • Sessions to promote the development of collaborative capacities with teachers (n = 57) (2021). • Communication in digital environments (n=37) (2021). • Sessions to foster intentional feedback and interaction with students (n=59).
	Field notes (2022): Workshop observations	The Role of the Teacher as Coach: The Learning Revolution (n=75) – workshop sessions on teaching strategies to generate meaningful learning
<i>Phase 4: Follow-up and teacher support:</i> March 2021 to January 2023	Field notes: Documents Teacher surveys (January 2023) Teacher interviews (January 2023)	<ul style="list-style-type: none"> • Minutes of meetings by area January 2022 (5 areas). • Minutes of teacher feedback on individual support sessions Teacher feedback surveys on ID-pedagogy-technology institutional changes (n=73) 2 recorded ZOOM 60-minute feedback sessions - teachers reacting to their roles in the changed programs and their observations of students (n=9)

3.3. Data Collection and Analysis

Data was collected using the various qualitative tools listed in Table 2. The data was analyzed using grounded qualitative coding methods involving a combined inductive-deductive process (Miles et al., 2014). After establishing a conceptual framework, a series of iterative steps were taken that included: i) inspecting the data sets for those data that could inform the research questions; ii) multiple readings and considerations of the data sets; iii) condensing and coding the data for key concepts and ideas that related to the theoretical framework and literature review; iv) identifying and refining salient or common themes from coded data; v) forming a conceptual framework that could be corroborated by findings.

4. Analysis and Discussion of Findings

Based on data from all data sets, the investment that the institution made not only in the alignment of design/pedagogy/technology but also in a systematic ongoing and regular support (Table 2) of faculty's efforts to apply appropriate changes in their teaching, reaped positive results - encouraging signs of development in teachers, and ultimately in their students. Two themes emerged from our analysis of the various data sets: 1) the evolving roles and identities of teachers and 2) the evolving roles and identities of students.

4.1. The evolving roles and identities of teachers

Change leaders in the institution were well aware that the sustained success of their 3-pronged initiative to ensure that their distance programming was aligned with current learning theory laid essentially in the hands of the faculty and their teaching practices. Evidence of a trajectory on the part of a majority of teachers (see Table 3) in terms of their roles was unpacked from the data analysis. Early data suggests that many saw their roles at the time as content developers and information distributors, responsible for motivating students to absorb knowledge and provide prescriptive answers to questioning. For the most part, faculty members in these early stages considered and fostered learning as an autonomous process and took little initiative to engage with students in virtual classes or online in forums. Over the course of the PAR project, the ongoing support and guidance teachers received led to considerable development of their teaching practices that reflected new strategies and roles as evidenced in: i) increased focussing on learner-generated content, ii) promoting of group work where students would co-construct new knowledge in their fields and think critically, innovatively, metacognitively and iii) exploiting interactive tools to engage with their students and to build enriched professional relationships and communities of practice. In tandem with these changed roles, teachers assumed more confident and engaged identities as online learning guides and facilitators. It is important to note that over the course of the 2 years, faculty's active engagement online went from 69% in 2021 after a year of support training to 90% in 2023.

Table 3: Evolving Teacher Roles.

Initial Teacher Roles	Evolving Teacher Roles	Representative Excerpt from Data
<ul style="list-style-type: none"> • Viewing one’s role as content expert not on teaching expertise • Focus on content development • Expository pedagogical strategies • Closed questioning in forums • Emphasis on teaching not on learners and learning • Fostering of individual student motivation and autonomous learning 	<ul style="list-style-type: none"> • Increased focus on promoting learner-generated content • Strategies that foster learners’ co-construction of knowledge and their learning • Intentional interactions to encourage critical thinking and debate • Role oriented to mediate learning through active methodologies • Increased understanding of learning as a collaborative constructive process • Recognition of virtual environments as spaces to promote engaged learning 	<p>“I feel that the accompaniment allows me to work with active methodologies so that my students can create, carry out and put into practice what they have learned" (Teacher interview January, 2023).</p> <p>“There is evidence of fewer expository classes and greater strategies for students to construct learning... For example, in the forums they went from closed questions to questions that favor interaction and debate" (Field notes, teaching managers, 2022).</p> <p>“Most of the teachers generate active participation, open questions in the forums, providing feedback and generating new challenges" (Area Head Meeting, Teaching Direction, October 2021).</p>

4.2. The evolving roles and identities of students

The teachers’ evolving roles and identities seemed to coincide with transformations they themselves witnessed in their students. An earlier report provides a full account of the change process and the resulting transformations in students (Charbonneau-Gowdy et al. 2022). One teacher sums up the early identities of many students in the following: "I have been able to see that many students who arrive, who are older people and after a long time they decide to study. So, they arrive first with that insecurity, low self-esteem and with the fear of failure... they get frustrated and want to drop out" (Teacher interview, January, 2023). Such observations of insecurity and low self-esteem among many incoming students were short

lived. Teachers' comments after a few months of observing students exposed to new teaching practices revealed more empowered, engaged individuals convinced of their role as key agents in their learning development and the value of social learning to that development - to being critical, analytical and innovative thinkers, strong communicators and self-directed learners. As one teacher observed: "At the beginning, very few students were connected, now there are more and more, and everyone participates. I think this helps them in the professional interactions they will have in their future, they are able to generate their own ideas and reflections" (Teacher feedback questionnaire, January, 2023). It is this and many similar observations from teachers that attest to the fact that the changes they made in their practices were instrumental in empowering and engaging learners in activities that had 21st century benefits for their skills in the immediate and long term.

5. Conclusion

It is not unusual for institutions to revamp their programs in an effort to improve both educational and financial results. Typically, curriculum reform initiatives begin as a macro-level priority with minimal input from meso or micro level stakeholders, except in the reform plan's operationalization agenda. Ultimately, the result is often what scholars call "the implantation gap." (OECD, 2020, p. 4). In the case of the institution in this study, the process was decidedly different. Besides initial and regular ongoing collaborative input from all levels - macro level leaders, meso level administrators and micro level teachers and students, a systematic and organized plan was installed to accompany and support teachers, and indeed students, over the two-year rollout period. Based on the strong evidence we uncovered, this long-term guided effort combined with the epistemological objective to align design, pedagogy and technology resulted in clear signs of a transformation in teachers' roles and identities – from detached deliverers of information to confident and engaged collaborators and guides in learning, and in students – from disadvantaged and impeded by low self-esteem to thinking and behaving as 21st century learners, engaged and confident in ways that reflected well for their futures. The significant drop in student attrition compared to pre-changes, from 40% to 24.2% based on latest institutional figures, is further evidence of the benefits of the approach. While we recognize the context specific nature of our study, we believe these results add to the call for similar initiatives in diverse levels and contexts to add to the empirical evidence for a way forward to educational changes in online learning.

References

Adinda, D. & Mohib, N. (2020). Teaching and instructional design approaches to enhance students' self-directed learning in Blended Learning environments. *The Electronic Journal of e-Learning*, 18(2), pp. 162-174.

- Barcelona, A. (2020). An analytic hierarchy process for quality action researches in education. *International Journal of Evaluation and Research in Education*, 9(3), 517-523
- Castro, M. & Tunibay, G. (2019). A literature review: efficacy of online learning courses for higher education institutions using meta-analysis, *Education and Information Technologies*, 26, 1367-1385. doi: 10.1007/s10639-019-10027-z
- Charbonneau-Gowdy, P., & Chavez, L. (2019). 3-M Model for uncovering the impact of multi level identity issues on learners' social interactive engagement online, *Electronic Journal of e-Learning*, 17(2), 131-143.
- Charbonneau-Gowdy, P., & Galdames, C. (2022). The impact on learners' identities of aligning pedagogy, design and technologies with theory in online courses. *Proceedings of the 21st European Conference on e-Learning (ECEL 2022)*, 51-60.
- Denzin, N.K., and Lincoln, Y.S. (2005). Introduction: The discipline and practice of qualitative research. In N.K. Denzin and Y.S. Lincoln (Eds.), *The Sage handbook of qualitative research* (2011 ed.). Thousand Oaks, CA: Sage.
- Margaryan, A., Bianco, M., & Littlejohn, A. (2015). Instructional quality of Massive Open Online Courses (MOOCs), *Computers and Education*, 80, 77-83.
- Miles, M. B., Huberman, A. M., & Saldaña, J. (2014). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Sage.
- OECD (2020). Curriculum reform: A literature review to support effective implementation. *Organization for Economic Cooperation and Development. Working Paper No. 239*.
- Pange, A., & Pange, J., (2011). Is e-Learning based on learning theories? A literature review.' *International Scholarly and Scientific Research and Innovation*, 5(8), 932- 936.
- Picciano, A. G. (2017). Theories and frameworks for Online Education: Seeking an integrated model. *Online Learning*, 21(3), 166-190.
- Vlachopoulos, D. & Makri, A. (2021). Quality teaching in online Higher Education: The perspectives of 250 online tutors on technology and pedagogy. *International Journal of Emerging Technologies in Learning*, DOI: 10.3991/ijet.v16i06.20173
- Zhang, L., Carter Jr, R. A., Qian, X., Yang, S., Rujimora, J., & Wen, S. (2022). Academia's responses to crisis: A bibliometric analysis of literature on online learning in higher education during COVID-19. *British Journal of Educational Technology*, 53(3), 620-646. doi: 10.1111/bjet.13191