

**A Consultant Self-Exploration: An Autoethnography Addressing Educational Change
Efforts in Chilean Engineering Education**

by

Rodolfo Manuel Vega

Bachelor of Education, Pontificia Universidad Católica de Chile, 1986

History, Geography and Civic Education Teacher, National Certification, Pontificia Universidad
Católica de Chile, 1986

Master of Education, University of Pittsburgh, 2012

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This dissertation is presented

by

Rodolfo Manuel Vega

It was defended on

May 6, 2021

and approved by

Charlene Trovato, PhD, Clinical Associate Professor, Department of Administrative and Policy Studies, School of Education, University of Pittsburgh

Ariel Armony, PhD, Vice Provost for Global Affairs, Director of the University Center for International Studies, University of Pittsburgh

Dissertation Director: John Weidman, PhD, Emeritus Professor of Higher and International Development Education, School of Education, University of Pittsburgh

Co-Director: Maureen McClure, PhD, Associate Professor, Administrative and Policy Studies Director, International Institute for Studies in Education, School of Education, University of Pittsburgh

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Rodolfo Manuel Vega, PhD

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Abstract

In this study I explore education consulting as a whole person learning experience, by applying autoethnography methodology. I focus my analytical attention to specific themes that impact my on-the-job learning, while working as an educational consultant in an undergraduate engineering curriculum redesign effort, under a competence-based education and credit system framework. I examine three key themes that emerged from my analysis of my experiences as an educational consultant: i) bias that appears to underlie the participants' perceptions and attitudes toward the faculty's role in the education process; ii) the politics of education curriculum reform, as seen from the perspective of an academic department; and iii) education consulting as a non-formal teaching and learning activity, as a way to incorporate all actors in redesign efforts. Each of these themes are presented here, in three main chapters that follow the first-person narrative of the autoethnography report style. I introduce autoethnography as a key research methodology, very well suited to achieve the goals of self-inquiry via systematic introspection, as the consultant's metacognitive effort to highlight personal lessons learned from the job done.

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Preface

I dedicate this work to my parents, who gave me the foundations of what I am today. In the same way to my immediate family, without whom I would not have had the energy or motivation to finish this thesis, as well as this academic achievement.

I want to acknowledge all teachers and professors who during my whole student life, helped in different ways to shape my intellect, and temper my ego. I am the intellectual that I am thanks to them. Special mention to my first mentor, the late professor Jaime Moreno Garrido, who trusted me as his teaching assistant (TA) in Middle East Ancient History. Professor Moreno mentored me in the systematic study of myths and cuneiform, and key topics that related to hermeneutics, history of religions, social anthropology, and linguistics, with strong emphasis on qualitative research methods, during the four years I was his TA. Since then, until his departure from our dimension of being, we kept in contact, enjoying time to time in fascinating conversations of diverse topics, which of course, included politics.

I am extremely grateful for my interactions with the late Professor Rolland G. Paulston, who was my first academic advisor when starting my doctorate in the Administrative and Policy Studies Department (APS) of the School of Education at the University of Pittsburgh. Professor Paulston responded to a presentation letter I sent to APS, inviting me to apply to the doctoral program. I am here because of him. I have also special recognition for Professors John Singleton, Maureen Potter, Noreen Garman, and my friend and colleague, the late doctor Jaime G. Carbonell, who was also my boss for twenty-four years. During all these years, he encouraged me to get the doctoral degree. And finally, I have special thanks to Professor John Weidman, my doctoral advisor, and Professor Maureen McClure, my co-adviser, and my doctoral committee members,

professors Charlene Trovato and Ariel Armony who make all this possible. I dedicate this doctoral dissertation to all of them.

Writing this dissertation was a major challenge. I would not be able to present this study in the current personal and intimate form if I had not had the help of a good friend and colleague. Vince Costa, Ed.D., helped me convey, in a gracious and direct way, my personal narrative in such a form that a native English speaker could understand. I respect and appreciate his support. I must also recognize the invaluable help from my son, Sebastián Vega Fuentes, PhD, who spent many hours throughout the years in fruitful conversations about the topics of this dissertation and in editing its final version.

1.0 Introduction

My personal motivation is to highlight the enquiry endeavor as a metacognitive process to achieve awareness that puts myself in the shoes of a learner, the person who is learning from the experience of being an education consultant. Thus, this study explores my process of experiential learning (Kolb, 2014) by using the introspective method of autoethnography (Chang, 2008). It focuses on my consulting experience during educational change efforts in engineering education. The contextual data comes from curriculum reform efforts during consulting experiences with a Chilean engineering school. These experiences are specific to curriculum design under a competence-based education and credit system framework in a Chilean higher education institution.

The Chilean higher education reform efforts to introduce competence-based education and a credit system present questions that may be important to explore from a consultant perspective. For example, I note tensions based on different backgrounds that highlight cultural stereotypes and bias among participants in the curriculum reform effort. Another potential source of conflict is the understanding of the educational endeavor at higher education levels and the role faculty play. For example, faculty trainers' pedagogical competences in general, and in engineering education in particular: to what extent do we assure that our educators have the pedagogical competence to create relevant learning environments for students to become proficient in the learning objectives outlined in curricula? To what extent do instructors in engineering education see themselves primarily as educators rather than engineers? Do they transfer some relevant engineering design and in the learning process competences to the educational planning and practice where they act?

This study analyzes the challenges that participants (faculty and consultant) face while working in redesigning curricula. I address this analysis from the consultant's perspective as a learner, in a reflexive metacognitive effort based on a culturally situated first-person narrative. In doing so, I present the case for using autoethnography as the research methodology. The autoethnography method allows open spaces for gazing and sharing the intimate personal cultural experience, with all its nuances, using the analytical tools of ethnography.

I use ethnography of the self (autoethnography) as a method for personal learning and as a means for communicating self-learning in a qualitative, reflexive manner. According to intellectual mapping methods, such as social cartography (Paulston, 1996, 1998), autoethnography can be mapped as a qualitative, interpretive research method (T. E. Adams, Jones, & Ellis, 2015; Denzin, 2014a; Ellis, Adams, & Bochner, 2011). It belongs to the "family" of self-narrative that focuses on cultural analysis and interpretation (Chang, 2008). The focal point of cultural analysis and interpretation in this approach is the self. Therefore, this research is an effort in self-reflection on my role as a consultant working in curriculum design efforts in a Chilean higher education institution, under a competence-based education and a credit system framework. Working on competence-based education gives me the opportunity to reflect critically on my own efforts as a consultant, researcher, and learner.

With this study, I aim to contribute to the field of educational consulting. I see this contribution as an effort to highlight the challenges and opportunities consulting offers to expand personal and professional learning. I also see that ethnographic methods are well suited to bring into conscience the many details of human interactions which always happen in a cultural context.

I see competence as the combination of emotional, cognitive, and social skills that are applied to responding wisely and effectively to challenges and opportunities posed by the

environment. More holistically described (Guerrero, Díaz Puente, & de los Ríos Carmenado, 2008; Wagenaar, 2014), competence is seen as the ability of a person to: i) act reflexively, strategically, and creatively in new situations, ii) apply appropriate knowledge and resources, including personal and professional networks, and iii) demonstrate an appropriate set of ethical values and attitudes.

In the context of competence-based education, the faculty and I use a taxonomy that distinguishes between transversal and discipline-specific competences. Transversal competences (also known as “soft”, generic or professional¹ competences) may be defined as a set of personal, interpersonal and professional set of skills, values and attributes that should be present in any technical or professional activity. An example of them would be “skills in communication and persuasion, the ability to lead and work effectively as a team member, and an understanding of the non-technical forces that affected ...[professional] ... decisions” (Shuman, Besterfield-Sacre, & McGourty, 2005, p. 5). They are present in all fields of human activity whereas discipline-specific competences (also known as “hard” or technical² competences) relate to a specific technical or professional field. These set of competences are the “fundamentals of the appropriate *Disciplinary Knowledge and Reasoning*³” Edward F. Crawley, Malmqvist, Lucas, and Brodeur (2011).

In this study I am using three guiding questions, the answers to which are somehow embedded in this study’s personal narrative:

¹ Engineering professional skills, as ABET classifies them (2010).

² According to ABET’s classification (ABET, 2010)

³ Italics and capitalize by the authors

Question 1: What are the underlying cultural differences which reflect tensions between the way engineering faculty trainers and education consultants see the practice of pedagogy in higher education?

Question 2: To what extent is the education consulting work affected by the perceived and real limitations for engineering faculty's agency in reforming undergraduate curricula?

Question 3: Can engineer education consulting explicitly be an act of education for both consultants and faculty?

Each question has the purpose of directing the analytical attention to manageable themes within the study. The first question aims to analyze cultural tensions that arise due to engineering faculty and consultant interactions. The second question relates to the politics of higher education reform efforts as the consultant experienced it and lived by faculty while working on curriculum redesign. The third question reflects on the role consultants may play as explicit or implicit educators (which is also an act of self-education) while interacting with participants. I will expand further on these three questions and the resulting study chapters in the methodology section.

1.1 Research Intent

I plan to use ethnography of the self (autoethnography), myself being the ethnographer and the informant at the same time, to explore my learning process (as experiential learning process) while I interact as education consultant with engineering faculty to redesign an undergraduate engineering curriculum. I point out that using autoethnographic method is an interesting exercise in introspection, highlighting diverse themes and relationships I try to convey in my personal story.

I first saw this possibility of enquiry when I read Varela and Shear's (1999) reference to first person narratives and especially Francisco Varela's (2001)⁴ article about his experience as a transplant patient. Varela and Shear (1999) note that first-person narratives are important aspects to consider in the study of consciousness. Being conscious about the "reality's" provisional explanation is a key step towards learning, if not its main foundation, I took the research enterprise (the consultant as the researcher in this case) as a process of learning, which is always subjective and affects the whole being of the learner by expanding his or her consciousness. I see that ethnographic methods stressed the relationship between first- and third-person interplay in the narrative as a way of knowing and as a way of inviting others to know about the cultural experiences of the researcher and the informants (the education consultant and the faculty, in this study). In this dialogical process, the researcher is confronted with his own assumptions and bias about the world of the other and of his own. In understanding the ways of doing and seeing one another, researchers as autoethnographers describe their own ways of seeing and doing. This may be a process of representing consciousness change, which, by reflection, may, in turn, eventually change the researcher's previous ways of seeing and doing, perhaps even, his cultural identity toward a process of hybridization. This is so when we consider that the work of an ethnographer requires a long-term exposure to the culture of the other by immersion, being inside (emic) and outside (epic) of that cultural place, and very much an insider in the interchange and action.

⁴ "In this (posthumously published) article, the author uses his recent experience of organ transplantation as the basis for reflection on phenomenological notions of lived experience, temporality, selfhood and medical ethics." http://www.imprint.co.uk/jcs_8_5-7.html#Varela. See a fragment at <http://www.oikos.org/varelafragments.htm>

1.2 The Literature on Ethnography in Educational Consulting

The ethnography of educational consulting is a novel endeavor. In a thorough search of online databases (Google Scholar; E-Zborrow and the Library of Congress) for publications since 2000, I found few academic papers or books devoted to analyzing the consultant role in the field of education (Table 1). Most of this literature focuses on how to do good consulting (Heron & Harris, 2001; Verlander, 2012) or the role of consultants, mostly in business management and organizational fields (Czarniawska & Mazza, 2003; Dixon & Dougherty, 2010; Kolb & Frohman, 1970; Wilson, 1998).

Table 1. Search Results on Literature on Higher Education Consulting

Keywords	Google Scholar	E-ZBorrow	Library of Congress
ethnography on consulting	0	0	0
ethnography and consultant	1	0	0
ethnographic study of consulting	0	0	0
ethnography on the practice of consulting	1	0	0
ethnography on the role of consultant	3	0	0
ethnography in the field of consulting	0	0	0
autobiography of a consultant	4	0	0
the culture of educational consulting	6	0	0
the life of an educational consultant	0	0	0
higher education consultant	2	1	0

I found two very interesting papers whose authors reflected on their experiences while consulting on an Asian Development Bank Project in higher education (Mauch, Weidman, Yeager, & Nelson, 1999) and on Mongolia's transition to a more flexible and decentralized system of education, with particular emphasis on strengths and weaknesses of the international education assistance approach (Weidman, 2002). What interested me is that each of the four consultants took

the first-person perspective to convey what was learned. While each of the narratives on the consulting experiences are focused on lessons learned, they also give some clues about the feelings of the consultants in the field. Another interesting paper is a dissertation from Middlesex University (United Kingdom) by Athina Tsoumaki (2019) that uses autoethnography to analyze the experiences an education consultant has in the field. This “highlights the contradictions and obstacles faced by the Education Consultant and provides a set of actions which could be the basis for initiating standards of Education Consultancy recognized locally and globally.” (Tsoumaki, 2019, p. Abstract)

As I stated before, my intent in this study proposal is on knowing how an educational consultant can learn from the experience. I am interested in opening a conversation with consultants who share the intimate details of their experiences in the field of consulting in education. Autobiographies are a good source that come to my mind. Also important are academic reports that use ethnographic methods to grasp and convey the educational consultant experience. An ethnographic method of this kind should ideally be done using a shadowing technique (Czrniawska, 2007; Knutas, 2018; Roan & Rooney, 2006) that consists of the ethnographer acting as a shadow of the consultant, following him/her in all the activities involved in consulting, on top of more traditional ethnographic interactions, such as interviews and conversations. For a more profound gaze into the intimacy of the consultant’s learning process, I suggest here autoethnography. The autoethnography method allows open spaces for gazing and sharing the intimate personal experience, with all its nuances, using the analytical tools of ethnography (more on this in the methodology section). **I must note here that *none* of the literature I found on higher education consulting are biographical, ethnographies, or autoethnographies.**

In addition to the above, this study may also contribute to highlight themes that may be part of the training of future education consultants, especially in the field of international and comparative higher education development.

1.3 First-Person Narratives as Ways of Knowing

As previously noted, the story in this study is a first-person narrative of my education consulting experience. I use autoethnography (Adams, Jones, & Ellis, 2015; Berger & Ellis, 2007; Chang, 2008; Denzin, 2014; Ellingson & Ellis, 2008) to make sense of my experiences in a systematic way; to make sense of my process of cultural understanding, of learning about myself as I grasp and understand the world of the other. What are the experiences that made evident the contrasts, stereotypes, and assumptions about the other cultures, being these ethnic and disciplinary cultures, which are evident in specific situations? Ethnography is based on specific culturally embedded experiences. I intend to address the self-reflection enquiry based on my experience as a consultant for a Chilean higher education institution.

As consultant, I enter the space of the other (the epic) bringing not just my specific knowledge of the field that I am consulting but also my cultural baggage, both, ethnic, being a hybrid⁵ (García Canclini, 2005) and disciplinary (a social scientist and professional teacher in the world of engineers). I then encounter the cultural baggage of the other. In this specific case, I

⁵ By “hybrid” I mean the process of intercultural exchanges and mixtures I experience living in Pittsburgh, US, for twenty-eight years. Culturally speaking, I am not a “pure” Chilean, nor a “pure” Pittsburgher but something in between.

immersed myself (the emic) as a curriculum design expert, in the professional and cultural space of engineering faculty at one of the Chilean universities where I was a consultant. Being myself a Chilean who has lived abroad for many years, early in my consulting activity with them, I noticed not just the evident differences in the professional background (myself from the “soft” sciences and the others, the engineering faculty, from the “hard” sciences and technologies), but also in the way of being Chileans. I am a hybrid, culturally different for having lived in the US for many years. This situation creates a rich learning environment by contrast, with its corresponding tensions. My approach to consulting, as in research, is that of a learner, immersed in a dynamic interrelationship where all parties involved interchange positions as teacher and learner. I do this with the systematic intention of formal education.

1.4 Where Am I Coming From?

My relationship with education has been a long lasting one. It all started in the mid-1970s, when I was forced to study in a six-year education program as an undergraduate, to become a High School teacher of History, Geography and Civics. This was the only way I could study history. My plan was to be a historian. I disliked education because of my bad experiences as a student. During my high school years, I was politically active and assumed leadership positions in student and political organizations. This is the basis of my critical view of education as a formal system and my comfort with critiques of formal education at all levels. During my formative years as a student of education and later as a teacher, I was lucky to have excellent professors who introduced me to critical pedagogy, participatory pedagogical methods and humanist philosophy and the psychological theoretical foundations of education. It was in my last year as an education student

that I specialized in curriculum development and instructional design. It was during this time that I learned to combine my experiences as a practitioner of “popular education,” a Latin American non-formal education in social movements (Freire, 1971; Freire & Freire, 2007), with formal education pedagogical theories and practices. After graduation, I worked as a high school teacher and in the mid-1980’s as a consultant in curriculum and instructional design for a higher education institution (*Universidad Diego Portales*, Chile). In that period, I started to teach at the higher education level (*Universidad Diego Portales* and *Universidad de Chile*). I also participated as a specialist in creating a post-title teachers’ program on the introduction of students with special needs to regular classrooms. It was at this time when I was invited to be a member of the Sub-Commission on Education of the Constitution Studies Group (*Grupo de Estudios Constitucionales*), at the time a well-known Chilean NGO that worked in public policy analysis. I was a Sub-Secretary of that Sub-Commission on Education when I came to the University of Pittsburgh’s Department of Administrative and Policy Studies in 1992.

From the moment I was an undergraduate education student I worked in the field of education. As part of my political involvement in the social movements that fought for democracy in Chile, I focused my activities as an activist in the Chilean National Teachers Guild (*Asociación Gremial de Profesores and Colegio de Profesores de Chile*), developing expertise on education public policy, and efforts in education system reform and teacher education. Later, as a consultant, my expertise extended to curriculum development and instructional design for higher education (community colleges and universities); as a consultant on the introduction of computer technology in education (The World Bank and UNICEF); as a researcher on language technologies and intercultural bilingual education (Carnegie Mellon University); and as a consultant on a curriculum

development effort in introducing competence-based education and the adoption of a credit system in one Chilean university.

In this study, I bring all these experiences that enrich my view and channel my motivation for better understanding toward consulting in education reform efforts. Being the ethnographer of myself, I expect to open these opportunities to learn.

1.5 The Research Framing Questions

As an autoethnographer, I take the same position as a learner. Here the intention is to bring understanding of the many questions posed by the experience. The learning motivation is present in general questions that frame the inquiry. These questions work as an operational guide to the inquiry. It is also important to note that the backbone of these questions and the quest, is the many faces that the dialectical encounter between different cultures, presented in each participant in the curriculum reform effort, the faculty and consultant.

Question 1: What are the underlying cultural differences and biases that reflect tensions between the way engineering faculty trainers and consultant see the practice of pedagogy in higher education?

This question seeks to highlight cultural tensions that arise due to engineering faculty and consultant interactions with an emphasis on professional and cultural backgrounds around the specifics of higher education pedagogy. In doing so, I explore how the ethnographic concepts of emic (the perspective of the other) and etic (the perspective of the observer) transpire from faculty and consultant discussions.

Question 2: To what extent is the consulting work affected by the perceived and real limitations for faculty's agency in reforming undergraduate engineering curricula?

This question relates to the politics of higher education reform efforts and the role of the consultant as an agent of change. An autoethnographic approach is used to grasp how personal emotions impact conflicts and resolution in dealing with natural leaders and stakeholders.

Question 3: Can consulting explicitly be an act of education?

This question focuses on the consultant as an agent of change at the interpersonal level. Learning may be seen as a transformational experience for all participants. The consultant acting as an educator, explicitly seeks to be a catalyst for personal transformation in the way faculty see the educational process that would in turn reflect upon the resulting agreed curriculum. Is this possible? The question aims to explore the key conflicts that this approach presents in the real world, based on the consulting experience in designing the engineering curriculum under a competence-based education and credit system framework.

2.0 Methodology

Autoethnography offers the potential to expand scholarship about human experience. (Ellis, 2009, p. 16).

This study focuses on responding to the research questions from a self-reflective position about my experiences in consulting with an engineering department at a Chilean university. The consulting work was in the context of a metallurgic engineering department's effort to redesign the undergraduate curriculum based on a competency-based education and credit system framework. In my research, I use autoethnography as the methodology as it is presented by Heewon Chang (2008; Chang & Boyd, 2011). In this approach of autoethnography, from a critical introspection process, the researcher's self is analyzed and interpreted in his/her cultural context, in his or her relationship with others, "to achieve cultural understanding through analysis and interpretation" (Chang, 2008, p. 48). In autoethnography, self-reflection aims to understand others' societal culture (ways of seeing and ways of doing) through the self (T. E. Adams et al., 2015; Chang, 2008; Denzin, 2014b; Witkin, 2014). In this inquiry approach, the researcher's personal experiences are the primary research data.

In this study, I see research as a learning process. As I use an autoethnography approach, the researcher is an independent learner; he or she seeks to achieve important spaces of control over the enquiry, stating the learning objectives (i.e., the research questions) and the methods used to achieve them. In this perspective, the research process starts with a motivation to advancing knowledge based on familiarity about the state of the art in a specific field's theme. In this study, the theme is the transformational (learning) process of consulting in higher education, as a human

experience. Research methods give the researcher confidence in addressing the unknown with the appropriate intellectual tools shared with colleagues in a specific intellectual domain or discipline.

In this way of seeing, the researcher is an autonomous student of “reality”. In doing so, he or she follows the rules of the game within a specific intellectual domain, which allows him or her to share and validate the results in a community of peers. From a personal perspective, the result of this learning process is self-transformation. In the case of the chosen research method, I understand autoethnography as a method of:

self-transformation through self-understanding. The cultural understanding of self and others has the potential of cross-cultural coalition building. Methodologically speaking, the direct access to autobiographical data provides researchers with the possibility of reaching the height of holistic and in-depth cultural self-analysis quickly (Chang, 2008, p. 57).

As a researcher, I systematically develop an awareness of myself as a culturally situated person, who plays a role of a provisional center in a relationship with others, also culturally situated. In the study, all research subjects share my ethnicity (although I, in my role as consultant and researcher, depart from that because of my immigrant status in another country, where I have lived more than twenty-five years) but diverge in the professional background and in the role, which each play.

As I point out above, the main source of data in autoethnography comes from the self, the accounts retrieved from memory, enriched, and contrasted with field notes taken while I was consulting, consulting reports I submitted as part of consulting duties, and personal communications with faculty in the Chilean context. For this last reason, in this study the others are considered, to some degree, as co-informants (Chang, 2008). Even as co-informants, I plan to protect their identities with fictitious names.

My research goal coincides with Stanley Witkin's goal (2014), as he nicely points out in an autoethnography:

What I am trying to do is to reflect in the present on how I experienced this event in the past. How can I understand my feelings, thoughts, and reactions at that time from my current vantage point? Can I learn something that will help me and others to understand better the experience of those close to a dying person and its connection to our death and dying practices? (p. 2)

Finally, I should devote some words to the language issue. Considering that English is my second language, that I started to command in my adulthood, writing an autoethnography account would not be an easy task. Conveying in a second language, the intimate thoughts and feelings, and doing so clearly and graciously it is hard, difficult or maybe an impossible task. Two languages collide in my mind, my native Spanish and my new language that I possess today. The former being in my mind as big as the Pacific Ocean, the last as small as the bathtub in my house. English is not just adding into my Spanish syntactic and semantic complexities, that map very well. It is not that easy, if there is any easy approach on this matter of languages. Over time I experience the mixture of two different cultural mindsets, each underlies a language, as another way of being a hybrid.

2.1 Autoethnography As a Valid Qualitative Research Method

I . . . attempt to take you as the reader into the intimacies of my world. I hope to do this in such a way that you are stimulated to reflect upon your own life in relation to mine (Sparkes, 1996, p. 467)⁶

I choose autoethnography because of an interest in my own learning process as a consultant. I am interested in knowing how much that experience changes me, and how much I changed from it. I understand that the process of learning is a process of self-transformation, that it is completed when the learner is aware about how much was transformed by the learning experience. Any life experience and professional experience, in my case, has the potential for learning, if we intentionally bring in a method to achieve this. I state that the process of self-transformation can be analyzed, described, and shared using autoethnography. I agree with Duncan (2004) when she points out that autoethnography differentiates from ethnography because it allows a systematic and critical immersion into the self by means of introspection, using the analytical tools of ethnography and the theoretical framework of the social sciences and humanities.

I see this research as a contribution to education research in general, and consulting in higher education reform in particular. Because this research focus on the self as the researcher by means of introspection, I also see it as a contribution to the collective development of analytical tools and validation criteria for autoethnography, as a valid academic methodology to gain an in-depth understanding of consultant's self as a culturally situated person.

⁶ Quoted by Sarah Wall (2006) An Autoethnography on Learning About Autoethnography, International Journal of Qualitative Methods. 5(2) p146-160

I see the self as the expression of the individual, the “basic unit of culture” (Chang, 2008, p. 23), who is dynamically “built” from early age, in a dialectical interrelation with the others (the collective), in a “community of practice” (Chang, 2008). As Chang points out (2008), culture is the consequence of interactions between the self and others.

Autoethnography benefits greatly from the thoughts that self is an extension of a community rather than that it is an independent, self-sufficient being, because the possibility of cultural self-analysis rests on an understanding that self is part of a cultural community (Chang, 2008, p. 26).

Autoethnography diverges from conventional ethnography in many ways (see Table 2). Both focus on cultural aspects of human interactions and the cultural meaning of their physical, social, economic, and political environments. The most noticeable difference is on the source of information, analysis, interpretation, and ways of representation. While autoethnography focuses on the researcher’s self as the subject of the inquiry, conventional ethnography focuses on the other as the subject of inquiry. Both methods use field notes to record observation and interactions, but in autoethnography field notes take a crucial aspect in also recording researcher’s state of mind and emotions. To do this, the autoethnographer may keep separate field notes to register real-time perceived accounts of personal thoughts, reactions, emotions, motivations that relate to interpersonal experiences and observations of cultural space and artifacts. These personal field notes, along with memory, are key sources of data collection in autoethnography. The representation of events and narrative style are another aspect where conventional ethnography and autoethnography depart. Evocative first-person narrative is the main writing style in autoethnography, while conventional ethnography prefers a third person, more impersonal style.

Table 2 . Differences Between Ethnography and Autoethnography

	Ethnography	Autoethnography
Intention	Understanding culture through the eyes of the other (the informant)	Understanding the cultural self by means of self-reflexivity, while immersed in cultural interactions with others
Focus	The others' culture	The own self, culturally situated in interaction with the other(s)
Researcher's positioning	The outsider going into the space of the other	The complete insider (the own-self)
Source of information	Field notes, records of observation of and interviews with the other (informant), cultural artifacts, pictures, videos, etc.	From personal memory and personal, intimate journal, "introspective and reconstructed field notes" (Ellis, 1995, p. 310)
Whose voice?	A researcher's representation of the voice of the other(s)	The introspective and evocative voice of the researcher's self
Data collection method	Recording (by diverse means) conversations with informant(s); observation of interactions; social settings characteristics and cultural/social artifacts	Systematic recollection of events by using personal journals, annotations, inventorying, timeline, chronicling (Chang, 2008)
Methodology	Conceptual and thematic analysis of field observation, recorded interactions and subject's narrative	Self-reflexivity and introspection grounding in social theory that mix ethnography of the self with evocative narrative (Ellis, 1995)
Writing conventions	Usually formal third person narrative in traditional scholarly format	First person narrative in different literary styles. Writing is a way of knowing (Richardson, 1994)
Narrative style	Authoritative, uninvolved voice, as an objective observer of the other	Intimate, subjective, emotional, evocative voice
Trustworthiness	It is presented by four criteria: credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985)	Constructive approach to validity and reliability (Holt, 2003)

Trustworthiness is at the heart of any research method. In traditional qualitative methods, trustworthiness is present in the combination of four criteria: credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985). These criteria may serve to give "rigor" to the qualitative research endeavors that respond to critics from more traditional quantitative research approaches. I see this tendency very clearly in the traditional qualitative researchers talk about the dangers of "going native" (Lincoln and Guba, 1981). "Going native" highlights the potential effect of not achieving the criteria for credibility. Traditional qualitative methods, such as conventional ethnography, achieve credibility by using "prolonged engagement, persistent

observation, and triangulation" (Lincoln & Guba, 1985, p. 301). According to Lincoln and Guba (Lincoln & Guba, 1981)⁷, "going native" is the danger that qualitative researchers face due to a prolonged immersion into the everyday life of the observed/informant. Here the task seems to avoid being influenced (changed) by the culture of the other:

The longer the investigator is in the field, the more accepted he or she becomes, the more appreciative of local culture, the greater the likelihood that professional judgements will be influenced. There are no techniques that will provide a guarantee against such influence either unconsciously or consciously; awareness is, however, a great step toward prevention (Lincoln & Guba, 1985, p. 304)

Autoethnography departs from these four criteria in many aspects (Holt, 2003; Wall, 2006). First, "being native" is the core of autoethnography. Mindfulness immersion in the own self of the researcher is at the core of this research method. From my own perspective, the autoethnography method consists of the process of self-awareness about my own bias; about my state of mind; my ways of seeing, thinking and doing, through the whole research process. This starts from the moment I think and plan my theme or topic, to the moment of analytical encounter with my memories and the moment of the evocative writing. Rigorous and systematic self-reflexivity is achieved by critically thinking about the use of the analytical tools of ethnography and the theoretical framework of the social sciences and humanities.

⁷ Quoted by Lincoln and Guba (1985)

A key criterion to validate autoethnography research and narrative is its evocative power. In the eyes of the reader, autoethnography should be authentic, believable and possible (Ellis, 1995).

2.2 The Data Collection, Analysis, and Interpretation Process

Personal data is the “basis of autoethnographic data” (Chang, 2008, p. 71). In the process of recollecting one’s own memories, we must be aware of the pitfalls and challenges that this presents. To minimize this problem, Chang (2008) advises to write down textual data,

chronicling, inventorying, and visualizing self, you are encouraged to unravel your memory, write down fragments of your past, and building the database for your cultural analysis and interpretation. (Chang, 2008, p. 72).

Chronicling self-memory, in the form of an autoethnographic timeline, is the first step in data collection. In this timeline, I use self-observational data from my field notes. While in the field, most of the time I collected this data in the same way I did with the informants’ voice and behavior. Self-observation data includes my actions and reactions (what I said, did, felt) while interacting with informants and the environment we were in (the cultural space). In recollecting this data for this study, as Chang recommends (2008), I also collect self-reflection data. This data reflects my former and current views of the experience. On the other hand, it is worth noting that self-reflection occurs in the ongoing research process (sort of a field journal, most of the time kept as “side notes” in the same field notes pad), which in my case is the past. It is a similar process in the present, while collecting memories and revising the data from the past. Both, self-observation

and self-reflection are strongly intertwined types of data collection. Both types of data collection of the self are at the center of the autoethnographic research endeavor. These are also important aspects of the learning process that illuminate the researcher's metacognitive analysis.

Inventorying is another useful practice (Chang, 2008). This consists of stating thematic categories that are filled by bits of information from memory. As the process goes, more thematic categories may emerge or collapse, in an incremental process to evaluating and organizing the data by relevance and importance. This process involves analysis and evaluation, advancing the data analysis process. This is an incremental process, which converts data into information. Among Chang's suggested thematic categories, the study focus on contents that may be organized as proverbs and keywords; routines; rituals and celebrations; mentors, leaders and followers; artifacts; physical spaces; and, behaviors and interactions that reflect identity and power/influence positioning.

In all qualitative interpretive research methods, data analysis and interpretation are very fluid and start as soon as data is collected from the sources. It is important to mention that research in this approach does not follow a linear path but is non-linear. Accordingly, as Chang points out, "(t)he inventorying activity brings together data collection, analysis, and interpretation" (2008, p. 76).

In processing the research data, I do not rule out relationship diagrams, an *ad-hoc* interpretation of what Chang refers to as kinship diagrams (2008). Relation diagrams and intellectual mapping (Paulston, 1998; Paulston & Liebman, 1993) are two analytical tools that follow visualization strategies to organize memories and field notes (Chang, 2008) and in communicating them to the reader.

As I point out earlier, there is special consideration to the challenges I encounter in doing the consultancy in Spanish, and all my filed notes are in the same language. Reflection and narrative for this study are done in English. I am proficient English speaker, but it is my second language. In my mind both, Spanish and English fight for attention, and expressions that come out nicely in one language, “deteriorate” in the other, maybe not in its meaning (perhaps) but in its aesthetics and elegance. In translating my field notes from Spanish to English, I put a lot of attention in the emotions and images that accompany the thoughts, the situations, the interchange in the field notes, trying to convey the complexity in narrating the facts and direct experiences. And then, it is the back and forth editing work with English native speakers, tending to not just the grammar (the right syntax) but also the semantics. This is not a task that can be accomplished alone. Rather, it is a community of speakers work. I recognize the invaluable help I have received from native speakers who had the patience to read and listen to my story and in editing the written narrative to convey my autoethnographic experiences. The task for a bilingual person is to determine how to convey the complexity of a sort of knowledge ecosystem, and the discovery that is implied in the self-transformation (the whole person learning) to successfully cross between languages.

In Chapter 3, “A Consultant Self-exploration,” I provide an account of the results of the inquiry process by thematic units, whose content follows the guiding questions stated earlier. Readers are introduced to the place where the experience develops: the external physical environment and the internal space of myself. Special attention is placed on the experiential learning of my journey while revisiting my consulting work for this study. The learning is comprised of a profound transformation of the learner’s self, in her or his cognitive, affective and physical dimensions, as learning as a whole person (Rogers, 1980).

Section 3.1, “Entering the Unknown, Sharing Expectations and Goals,” is based on my experience entering the space of the other in the consulting work. I value this experience as an opportunity to see myself as a learner, who learns on the job as an experiential learning process. This chapter serves as an introduction to the autoethnographic analysis of my educational consulting while working in the undergraduate engineering curriculum redesign. In this analysis, I reflect from the perspective of the learner, an experiential learner who is learning on the job. I plan to share with the reader my learning awareness that relates to my vivid experience of transformation.

In Section 3.2, “Where Are We Coming From? Where Are We Going?”, I focus on the difficulties for faculty (who are not trained as educators) to see themselves as teachers working in the field of higher education, for which they should consider gaining competences in higher education pedagogy. Many times, prejudices in the way people see education play a damaging role in advancing higher education pedagogy as the field of formal expertise of faculty. In this chapter, I explore the bias that the faculty and I have that conditions our views on the educational field.

In Section 3.3, “How Much Space Do We Have to Dance the Reform Tune?”, I focus on the perception that a group of faculties at the department level have on their position in the politics of the institution, their ability to decide major changes and the freedom to advance an innovation agenda. Here, in my consulting position, I navigate what is faculty’s belief in a narrative that promotes a homogeneous and widely shared institutional culture, with quite well identified stakeholders and leadership. Of course, reality is much messier than we want to believe.

In Section 3.4, “Consulting as a Teaching and Learning Process,” I reflect on my thoughts and feelings when confronted by the possibility that a consulting activity can be seen and conducted as a teaching and learning process for faculty and consultant. Here, drawn from my

experience as a teacher and a learner, which went beyond the “informal education” process to a more deliberated education action via presentations (lectures) and workshops, I planned these activities to transfer pedagogical content (to educate the faculty on curriculum, instructional design and pedagogical practices that center on the learner. I used parallels with engineering methods of planning and execution with the explicit intention to provoke learning, reflecting on how I felt and why I took a particular direction.

3.0 A Consultant Self-Exploration

The bus was snaking-up the hill on a bright, sunny morning. It was the beginning of summer and the air from the Pacific Ocean was felt in my body with its characteristic freshness, and the salty smell of the sea reminded me of my childhood vacations on the coast of central Chile. Thus began an adventure as a consultant that would take me more than a year of dedication to a subject that motivates my academic career in comparative international educational and education reform efforts. In that opportunity I would apply my professional knowledge on curriculum and instructional design in a consulting capacity. Time has passed since, and that experience lingers in my mind. That experience matures over the years and benefits my work in academia, impacts my approach to consulting and the way I behave as member of advising boards with some Latin American engineering schools. Always in my mind was the question about the personal change that that experience triggered. A personal change that it is not superficial does not belong only to the intellectual domain or memory, but to the many memories that constitute my own self, including my body's senses, my feelings and emotions. Working as consultant in that particular setting has an impact on my transformation as a person that has implications on the way I understand higher education in an intercultural and interdisciplinary context, and in the way I relate to peers in the field. All experiences that are lived and processed by critical introspection, have the potential to trigger personal transformation. I equate that personal transformation to learning, a real, profound transformational effect of the whole self.

I remember when I had the first understanding of learning, when I had a full conscience of a sudden transformative experience of the self. I was riding a bus from one Chilean city in the south toward Santiago, the country's capital city. At that time, I was taking a geomorphology

course, in the Geography Department of the Universidad de Chile. As many of my classmates who were inclining more to humanities, such as the study of historiography, this course was especially hard for me. I was reading a book chapter on rock formation and sediment deposits for a coming test. While I was resting looking the landscape through the bus window, I saw the trees and small valleys between hills. I could see the road ahead, which cuts into the side of a hill and, like in a multi-layered cake, I saw the cuts in the rock and layers of sediment of different colors. Suddenly, I saw there in front of me an open book of geomorphology. A chill rose up my spine towards the nape of my neck, joining the palpitations of my temples and a flow of pleasant emotions rose to my forehead, uniting understanding, emotions and sensations in a single experience. I was able to understand the historical complexity of that formation, the layers of deposit and the base of the granite and other type of rocks, naturally organized in layers. The modeling effect of Earth's crust movements that built the hill and surrounding mountains, with valleys in between, that got filled by the hills' erosion and river's transportation of material, during millennia.

From that moment on, I felt myself as a different person. My whole self was transformed by that experience; intellectually, emotionally, physically. I felt my body presence in the now and then of the experience, my positioning in that landscape, in that bus, as part of the human position in and in the intervention over nature. I did not only acquire geomorphology knowledge but also an in-depth, experiential understanding of the natural forces that shape, in the past and in the present, that landscape and my life in it, as part of the human transformation of nature, in that road that cuts the hill, exposing the sediments, which are the open book of Earth history. That experience changed me completely. From there on, I would not see that or any other landscape as I did before. That is, in my perspective, learning. And this was not the end of the story. That realization of learning (as in the Japanese Buddhist experience of satori, awakening) had a

profound impact in me as student of education, at that time soon to becoming a high school teacher, specializing in history, geography, and civics education. As we all in that field well know, the conceptualization and the theories of learning are the core of the trade. Learning is the main characteristic of all sentient beings, especially humans.

The goal of education as I practice it, is to create the relevant environmental conditions that facilitate in our students (and hopefully in ourselves as teachers) the transformative experience we call learning.

The kind of learning I am referring here (arguing that this is “real” learning) is well expressed by Carl Rogers as “to learn as a whole person:”

So, if I were to attempt a crude definition of what it means to learn as a whole person, I would say that it involves learning of a unified sort, at the cognitive, feeling, and gut levels, with a clear awareness of the different aspects of this unified learning. I suspect that in its purest form, this occurs rarely, but perhaps learning experiences can be judged by their closeness to or remoteness from this definition (Rogers, 1980, p. 265).

Rogers points out that whole person learning involves the intellectual, affective and gut-level dimensions simultaneously. Let me add that in order to learn, the learner needs to have a full awareness of the experiential interplay and connections between each of these dimensions of the self. And this is possible by the critical introspection and gazing of our own self (the learner), using methods such as autoethnography, that facilitate metacognition.

I explore experiential, on-the-job learning (Kolb, 2014) by using the methods of autoethnography. In the context of this study, I understand experiential learning as the transformative consequence of systematic observation accompanied by a theoretically founded

critical reflection of a culturally lived situation, that comprises the combining use of the intellect, the emotions, the senses, and evocative memory directed to understanding and action.

3.1 Entering the Unknown, Sharing Expectations, and Goals

It was at the beginning of summer in a coastal city of Central Chile, a fresh morning. I was a little nervous because this would be my first encounter with the faculty at the engineering department to introduce ourselves and talk about the task we all faced, the redesign of the engineering undergraduate curriculum. It was not the first time I confronted a similar task, but in the other occasions I was part of a team of experts, in a mid- to short-term consultancy. Now, I was the only expert in a yearlong consulting task, devoted entirely in guiding the engineering faculty in their collaborative effort to redesign the undergraduate curriculum under a competence-based education and credit system.

The morning I introduced myself, and each of the seven faculty of that engineering department took turn in doing the same, I was informed that only full-time faculty would be involved in the curriculum redesign effort. That was the reason why there were only seven faculty at that meeting. We discussed the conditions of the consulting, defined by a mandate from the Chilean Ministry of Education (that funded the effort) that the redesign process should be 1) a collaborative effort among all full-time faculty and 2) my role as consultant was to coordinate and guide that task. In my understanding that meant the faculty should devote time to this task on a regular basis (at least a couple hours a week). Not long into the process, it was evident that this mandate was unrealistic.

The heavy loads that faculty already had with other academic duties, plus an evaluation visit from an accreditation committee that ran parallel to the consultancy. Bad timing! Everyone who has experienced an accreditation review knows how critical, stressful and time consuming the visit by the accreditation committee is for any higher education institution staff. On the other hand, I soon discovered the traditional habit of giving the consultants all the responsibility in decision-making, resolving issues and writing the reports, was a situation more common than one might think. Most of the involved faculty expected no innovation in that trend. My motivation and the invitation from the University authorities (and the declared motivation of the Chilean Ministry of Education policy) was to use this consultancy as an opportunity to innovate and introduce the needed changes. That was at odds with most of the faculty expectations and with their time-consuming academic responsibilities. This was the first challenge that surfaced in different moments during the consulting period, a clear source of tension and frustration for all of us.

In our first meetings, I laid out my expectation to act as facilitator of change and innovation in the way education is viewed and practice in a higher education institution. As the consultant, I thought that I should take responsibility of the change process, its products and implementation.

“I want to be seen as one of you --I said to them--, as a colleague who assumes the same challenges, risks and responsibilities in the curriculum redesign process and its products.”

Most faculty in that meeting looked at me with a clueless face. Remember, the common expectation is for the consultant to do most if not all work, with some input from the faculty.

“I do not want to take an outsider position --I said. Usually, a consultant appears as oblivious to the products of his or her work. He arrives, collect data and opinions, does the processing, arrives at conclusions, and writes a report to be shelved and leaves. I do not want this consulting to have same destiny. I want to take the risk of foreseeing with all of you a path toward

implementation.” I did not know what effect my stance provoked in them. Maybe some believed, some not. But my commitment was to make my words real. I felt confident and sure that I can contribute to real change that competence-based education and a credit system might bring to higher education pedagogy in that engineering department. At least that is what I understood it is the promise of this approach to education. My confidence was based on the faulty assumption that the faculty wrote the grant proposal to redesign the curriculum and were motivated by the same goal. On the other hand, maybe I forgot one common saying among consultants: “the client never knows what he or she wants”. At that time, it did not occur me to ask who actually wrote the curriculum redesign proposal. That person(s) would be a key ally in this work, as Wergin (1989) suggests.

Entering the field has different forms; most of them imply adaptation and negotiation. Words and gestures, explicitly and implicitly, give clues on the positioning of all actors. Often, words contradict gestures, as conscious contradicts or covers unconscious desires and fears. First encounters bring all of these as baggage. Our state of mind and conscious awareness at moments like that, allow us only to see just what it is at the surface. Further in our encounters we are open to more subtle understanding, while we negotiate (by words and acts) our space in and out of the different layers of being in the field.

Constructing identities and negotiating roles in the field is a common theme in ethnography, for example, as a research instrument (LeCompte & Preissle, 1993) or as an “impression management” (Hammersley & Atkinson, 1995) to secure access and trust. As a research instrument, LeCompte and Preissle (1993) suggest that the researcher (in this case the consultant) is the ultimate data collection and analysis instrument, this role mediates all other roles and identities in the field. The same can be argued for the consultant. By “impression

management,” Hammersley and Atkinson (1995) refers a strategic decision on what impressions are suitable to gain trust and access to key people in the field to achieve a successful fieldwork, avoiding those impressions that create obstacles for that end. “Impression management” must be guided by ethical considerations.

Amanda Coffey (1999) criticizes the above approach because it does not “address, in any detail, how fieldwork shapes and constructs identities, intimate relations, an emotional self and a physical self” (Coffey, 1999, p. 5). This is precisely the space where learning can happen. Fieldwork, as in every human interaction, opens the potential for self-transformation, if we mindfully observe the other, and ourselves in every interaction. We would discover how plastic identities are, and how they are constructed and de-constructed in that interactions, in the dialectics of tension and distention, conflict and resolution, hidden and expressed wishes and desires and joy. I agree with Coffey (1999) when she calls for a less instrumental use of identities and a more open expression of the self, in the field and in the narrative of the final report. Nevertheless, I cannot disregard the researcher as instrument and impression management approaches. “Naturally” we would tend to play constructed roles in our interaction with others. The key from the position of a mindful field researcher or consultant is to be aware of those natural tendencies, make decisions on that, considering truthfulness, and build trust. I think that mindfulness on the role we choose to play and the conscious identity construction while interact with others in the field, is the basis for learning by introspection.

Going into the field, implicitly negotiating roles and expressing provisional identities, from the first encounter with the engineering faculty, I experienced the tension between being myself (with all the complexities and obscurities that this implies) or being more cautious and strategic in creating first impressions (Hammersley & Atkinson, 1995; LeCompte & Preissle, 1993). I

sensed a similar tension from the faculty, more so when I laid out my collaborative approach to this consulting toward curriculum innovation, assuming same responsibility in the task, as peers. My cross disciplinary experience that is comprised of the disciplines in humanities, social science, and computer science, and adding my assuming hybrid cultural identity, made me confident in achieving what I was proposing. However, this type of confidence is unidirectional. Did the faculty feel confident in facing this task as well? Soon I discovered that most faculty were not as confident as I was. Their previous consulting experiences with people from the education field played a great role in influencing their opinions. I was another expert from the education field who may not have the language and the mindset of an engineer. They were right. I must show them enough understanding about the job challenges and mindset of engineers to properly guide them in the challenges of curriculum redesign. This role and identity construction was of course a source of tension, which fed on bias; prejudices supported by previous and problematic experiences.

Now I think that, in this specific context and challenge, the construction of my role as consultant should be built from the position of a learner, which implies a fluid identity to open myself to transformation. But I could not expect the same attitude from each of the participant faculty. I acknowledged that this was a very difficult path because it makes me vulnerable. Will I show this vulnerability when everyone expected the authority of an expert consultant? Will I show this in my attitudes, language use, gestures, the uneasiness of feeling weak and vulnerable? In this situation as the consultant, I am the other who enters a community of peers. I am the visitor in a different world, in a different culture, in a different mindset. At that time, I had this veiled feeling of vulnerability in my role. So, I looked for collaborators among the faculty, who can work as a mediator to create trust and helps me to learn quickly toward becoming a peer.

Looking in retrospect at the start of the consultancy, in that first meeting I recall in this chapter, I missed a great opportunity in asking the faculty present at that meeting what they expected from me. This question would open to a more in-depth (and maybe honest) dialogue about expectations, which in turn would facilitate role development on both sides, the consultant and the faculty. The potential answer(s) to that question would also help in reshaping from the bottom up, the consultant contract's terms of reference.

In that first meeting, I spent more of the time laying out my views and preferences (which comes with a lot of restraint due to my own insecurities on how I was seen by the faculty) and the consultancy terms of reference. The terms of reference state what the contracting agency (the university, that must respond to the Chilean Ministry of Education that provides the funds and states the consultancy's framework and policies) expects from us, especially from the consultant. In asking the faculty what they expected from me in this consultancy, and in discussing the emerging themes conveyed in their possible answers, we would develop rapport and trust, two key foundations of a good participatory approach to consultancy.

That key question would bring together emic (the insider point of view) and etic (the outsider point of view), that are at the core of being in the field, towards a more harmonious flow of interactions between the participant faculty and me. In turn, it would enrich our mutual understanding not only about the task we share, but as important, what we may achieve as persons with agency on that task.

Another important consequence of asking what the participant faculty expected from me and from the task at hand, was to facilitate the discussion about each's point of view that in turn serves to illuminating our understanding about the roles we play in higher education, which is the subject matter of the next section of this chapter.

3.2 Where Are We Coming From? Where Are We Going?

Bias, even when we are not conscious of it, has consequences that we need to understand and mitigate. The stereotypes associations we carry in our heads can affect what we perceive, how we think, and the actions we take (Eberhardt, 2019, p. 49)

Roberto, one of the engineering faculty, claimed: “Why are we talking about pedagogy? Here we are not preparing teachers but engineers, and we have been very successful in doing that without studying pedagogy. We do not need that.”

He was showing his frustration with a vocabulary that he relates rightly to the education field. My background in education and the words I use triggered a reaction that might be based on engineering faculty’s past experiences with people like me, professional educators who study at schools of education.

“What do you do most of your time, working as an engineer or as a teacher in a university setting?” I reacted defensively. Of course, our attitude opened a profound space for conflict and misunderstanding that make more difficult the task of working in reforming the engineering curriculum. Later, I understood that we must face our prejudices and bias as important part of the process. I felt that it was in my shoulder, as consultant, the responsibility to conduct this redesign process. I must figure out how to deal with this situation. My frustration translated in an angry attitude toward that specific faculty. With his face many other faces appeared; faces of many others who I categorize as people who despise people like me, professional teachers, and perhaps, the complete field of education. The history I have lived, where anyone feel confident enough to talk and make decisions on education, just because they “know education” for the mere reason that they attended schools for many years, as students. People who make decisions on education, most

ministers or secretaries of education, and in management positions in the education materials industry, are not professional educators. The majority are from other professions. It seems to me that Roberto represents that people. He is here to remember me my professional/technical locus – I thought then. Very profoundly in my unconscious I felt threatened by his words. I lost confidence in my own work as expert in education. It is interesting to look into the ways I construct perception and how store feelings, faces, and situations, in that specific box (that particular categorization box), which links to specific chain of emotions (negative emotions in this specific case). If I am in charge of conducting this process, it is my responsibility to deal with my emotions (which are linked to prejudices, stereotypes), and helps to keep relationships as good as possible. How can I do that? Are my thoughts, feelings, emotions, triggered by Roberto's words an opportunity to face my own bias? Maybe that it is the path to follow, I think now.

The first and rational approach to face bias is to revise assumptions and prejudices based on evidence. Better if that supporting evidence is the result of a systematic critical revision of events. Amanda Oleson and Matthew Hora (2014) point out that we are wrong when we make the assumption that higher education teachers teach the way they were taught. In their research on how higher education teachers develop their teaching knowledge and practice, they found “that faculty do not only model their teaching after previous instructors, but also draw upon a varied repertoire of knowledge and prior experiences” (2014, p. 29).

There are many other factors, contents, and practices (which include peer support, and experiential learning on the job) that contribute to the foundation of faculty pedagogical practice, which in turn influence identity formation. To contribute to the curriculum reform efforts, we should call in the cumulative pedagogical experience faculty already have (even if they are not aware that they are higher education teachers) and build from there. If that is the case, engineering

faculty and I must confront our bias with information based on evidence (Oleson & Hora, 2014), or at least that is the logical path to go.

In one-on-one conversations with each faculty, I saw the source of the conflict, which in turn gave me the opportunity to rectify my approach to this task. The basis of this conflict was the differences in disciplinary cultures, of ways of doing, and ways of communicating. And all these can be seen as symptoms of something deeper, prejudice and stereotypes from both sides that trigger bias expressions.

Jennifer L. Eberhardt (2019) notes that “[c]onfronting implicit bias requires us to look in the mirror” (Eberhardt, 2019, p. 8). To look at my mirror, because bias is an inherent part of me, as it is in all of us. Bias is an aspect of our social and cultural conditioning.

To understand the influence of implicit bias requires us to stare into our own eyes ... to face how readily stereotypes and unconscious associations can shape our reality. By acknowledging the distorting lens of fear and bias, we move one step closer to clearly seeing each other. And we move one step closer to clearly seeing the social harms –the devastation—that bias can leave in its wake (Eberhardt, 2019, p. 8).

“We have previous experiences with people from education.” Guillermo, another engineering faculty told me. “You are not the first one. The university has an education support team. They have secondary and elementary education background. One of them has a master’s degree in education. My problem with them is that they do not understand our field, the specific ways engineers should be educated. They emphasize clerical and bureaucratic work. Filling long forms, declaring objectives and activities in too detailed syllabus and lesson plans to satisfy the demand from that office. When we have education workshops, the examples are far from what we need in our field”, he concluded.

Guillermo gave me the clue to revise my own perspective and see to what extent I have changed during all these twenty plus years working in higher education, mostly around engineers and computer scientists. I should translate the language of higher education pedagogy from the field of schools of education to the schools of engineering. Guillermo was a natural ally in this task. From that moment, I made the commitment to deepen my learning (my transformation), making a conscious effort to understand and learn the intellectual and technical world of the engineering faculty, my partners in this adventure. From that moment my language changed, with that, for sure, my cultural hybridization increased. And my bias remains a hard reality to be confronted. Biases are the result of generalizations and categorizations based on cumulative and repetitive experiences (Eberhardt, 2019). Those categorizations may result in stereotyping and prejudicing that condition our relationships with the faculty.

what we perceive is influenced not only by the labels we are provided but by our own attitudes about the rigidity of categories. Although we tend to think about seeing as objective and straightforward, how and what we see can be heavily shaped by our mind-set (Eberhardt, 2019, pp. 29-30).

The resistance to be labeled as a teacher instead of an engineer, for Roberto, and maybe some other faculty, may come from fear to be seen as a less serious professional (educators seen as technicians rather than professionals) and loose the prestige that the engineering profession may possess. His bias was at work. But what about my own bias that made me think that way about Roberto's motives?

Roberto was not alone in having a critical and negative view on the task we were entrusted by the university. Half of the department faculty expressed concern or dissatisfaction and tried to avoid our meetings. Their academic load and the visit of the accreditation commission contribute

to the lack of participation. Those were very difficult times for me. I felt very much alone with a task that maybe was too much for my capacity and experience. Was I too ambitious, unwise, when I agreed to take this job? This started to change when I did a presentation about curriculum and instructional design, using the language of engineering: aiming to control a process, having at sight the inputs and outputs, the supplies and the process relevant to the outcome. From there, I called into considerations the complexities of human learning and its demands to teachers, who are in charge of creating relevant and meaningful teaching and learning environments that facilitate students learning. I had the sense that I was successful in demonstrating to the engineering faculty, the importance and relevance of explicitly introduce higher education pedagogy into their practice as teachers of engineers.

Higher education pedagogy is a practical endeavor that aims to improve the quality and effectiveness of instruction. This means improving students' educational opportunities to develop their competences in the professional and academic field of their choice. To improve their chances to achieve learning, some institutions of higher education have established policies and actions to introduce higher education pedagogy in an environment where academic freedom is highly appreciated and actively pursued. The faculty and I reviewed some experiences of faculty in-service training to find guidance and ideas that may be useful for implementing a competence-based education framework with its active learning demands in the field of engineering.

The so-called traditional methods of teaching engineering started after WWII with a shift from an emphasis on training for industrial practice towards scientific and mathematical fundamentals. From that time on, engineering education's traditional method of teaching was lecture-based. A new shift started in the early 1980s with a wave of reforms concerning engineering education in response to complaints from the industry and an increase in diverse

student populations (Brent & Felder, 2003; Fink, Ambrose, & Wheeler, 2005). Besterfield-Sacre et al. (2014) point out that there is a general consensus that engineering education,

- Did not prepare for solving complex problems in fast-changing global workplaces;
- Lack of attention to how people learn and knowledge about available teaching methods founded on learning research;
- Lack of diversity, both gender and ethnic; and
- Lack of trans-disciplinary formation to develop important competences, such as working in intercultural and international environments, teamwork, and communication skills among others.

Consequently, it was a call for reforming engineering education that stated the need for a curricula that includes integrated and experiential activities and early exposure to engineering; provide an interdisciplinary perspective; address different learning styles; focus more explicitly on skills such as problem-solving, communication, team and leadership, and life-long learning; emphasize the social, economic and, environmental impact of engineering decisions; take a systems approach; stress design; and incorporate ethics. Further, they call for these changes to be informed by cognitive science and educational research and to educate students for life by helping them learn how to learn (Fink et al., 2005, p. 185).

Engineering education is a profession-oriented education. This type of education has a long history of practical learning, as does teaching, health or medicine, or the law. All of these professions, to different degrees, experienced the distance from practice as soon as more theoretical, research-oriented approaches were introduced in their curricula. As part of a new approach on professional education at the higher education level, we find ideas such as “cognitive apprenticeship” (Sheppard, 2005).

Also important is to realize that it is somehow difficult to change faculty pedagogical practices that often are based on one's beliefs (Moore et al., 2015), so it is advisable to keep in mind some conditions that could be key to obtain good results:

- Faculty should act as a community of teachers,
- Need to clearly see why learning about teaching is important,
- What to learn that is relevant for engineering education that combines theory and practice to respond to demands posed by the industry,
- How to learn about engineering pedagogy in a way that is efficient and does not jeopardize other academic duties.

There is also the need for peer and institutional support to allow enough time for the changes to take place (Besterfield-Sacre et al., 2014). Among contributing activities that work for success, Kalonji (2005) mentions “the importance of alternative approaches to assessing student learning; the need for programs for graduate student and faculty development; and the implications of all of these for diversity in our communities” (Id, p. 146). Finelli et al. (2008) note that higher education pedagogy consultants are important actors in faculty instructional development activities. “[A]n instructional consultant plays a key role in assisting the faculty member to both interpret the available data and identify strategies for improving teaching” (Id, p. 405). Usually external financial support, especially at the starting point of the reform effort and through the time needed to mature, seems very important. For example, in the US, National Science Foundation (NSF) funding was an important factor. The Accreditation Board For Engineering And Technology, ABET (2010) criteria for accreditation is also a strong incentive that gives reform effort direction, as it is the support and encouragement from other institutions, such as the National Academy of Engineering (Engineering, 2005; Olson, 2015).

Active and contextualized teaching and learning processes appear as the best suited pedagogy in professional education in general and in engineering education in particular (Lachiver

et al., 2002). Competence-based education and credit systems, as we have shown in this study, can be better served by an active pedagogy approach. Active and contextualized education methodologies are those that expose the student to a close exposure to the real world, where the future professional must perform. In the approach to competence-based education and credit systems that the engineering teachers and I had, experiences relatable to engineering professions were at the core of educational practice to assure success in learning.

The methodology of projects and problems presents major comparative advantages for the training of engineers (Lachiver et al., 2002). Working with problems and projects derived from life stories of engineers' professional performance (Schank, 1995, 2015), create an atmosphere of anticipation in which the engineering undergraduate student tests their skills and develops the competences that will be critical in their future work, whatever the path he or she chooses. The theoretical-conceptual framework of learning-by-doing (Aldrich, 2005) provides us with a particularly interesting way of organizing pedagogical practices, that anticipates the work environment and at the same time, allows participants to assume the typical roles of work environments, favoring complex learning (Aldrich, 2005; Schank, 2005).

According to McLellan (1994), there are at least three formative environments where significant learning can take place: i) performance in the workplace, ii) in educational settings where realistic cases are presented, and iii) based on audiovisuals and computer simulations, that present the contextualized and current themes. Of these three ways of creating formative environments, the second one presents the greatest advantages, mainly because it requires the constant action of the student in controlled environments and where the actors of the process (students and teachers) can play around different degrees of complexity, and introduce moments for metacognitive analysis, process evaluation and feedback, i.e., where difficulty and error are

privileged instances for learning, while the expert is at hand to guide the process of reflection and experimentation.

All the above was presented and discussed with the faculty in the workshops I conducted, inspired by Fernando, when he suggested to do presentations on higher education pedagogy. Of course, this never was an easy task. Among all the complexities and conflicts, we must also respond to the terms of reference under the competence-based education and credit system framework.

According to the Chilean Ministry of Education, the redesigned curriculum should serve to organize the university's teaching and learning activities in a way that contribute to the students' development of the specified professional and technical competencies, during the course of their studies. All students' instructional activities (such as lectures, laboratory, research work, recitations, etc.), would be counted as real time (number of hours devoted to each task), which would be expressed as credits (the credit system we must incorporate into the new curriculum). Consequently, the credit system implicitly aligns with a student-centered pedagogy. This reform effort followed the Chilean national guidelines, which also provided competitive funds through the Higher Education Equity and Quality Improvement Program⁸ (MECESUP) of the Ministry of Education (MINEDUC, 2017). The MECESUP program follows the Latin American Tuning Project (MECESUP, 2004), which follows the European Tuning project (Beneitone et al., 2007). These programs proposed competence-based education and a credit system as an effort to put the higher education system in tune with current and future demands from industry (Reich, 2012).

⁸ *Programa de Mejoramiento de la Equidad y Calidad de la Educación Superior*

The proposed competency-based approach and credit system to support higher education's curriculum reform can be traced to the late 1990s. At that time many European and Latin American governments and universities started a process of change to respond to challenges posed by neoliberal perspectives claiming that globalization trends have generated the need to promote, as the primary outcome for education, the formation of highly skilled professionals and technicians who can satisfy job market demands. This can be seen as a "pro-business orientation" (Aboites, 2010). As Aboites points out (2010), in concert with international trade agreements, these higher education institutions and governments saw the importance for international collaborations to improve their success in a globalized international scene. In Europe this challenge was addressed by the Bologna Process (Keeling, 2006), which started in 1999. Twenty-nine European countries decided to reform their higher education system by creating a European Higher Education Area (Aboites, 2010). The Bologna Process' intention was to create a better integration and convergence in higher education by sharing resources, students and making them more responsive to the demands and challenges of the 21st century, resulting in better competitiveness in the international context (Keeling, 2006). In other words, the Bologna Process was to create;

a 'zone of mutual trust' that permits recognition of credentials across borders and significant international mobility for their students. While still a work in progress, parts of the Bologna Process have already been imitated in Latin America, North Africa, and Australia. The core features of the Bologna Process have sufficient momentum to become the dominant global higher education model within the next two decades (Adelman, 2009, p. 8).

This approach to the higher education reform effort was framed under the Tuning–Latin America competences project that started in 2003 (Beneitone et al., 2007), and promoted by the

European Commission (Aboites, 2010). Several Latin American university systems, such as Argentinean, Brazilian, Chilean, Colombian, Costa Rican, Guatemalan, Mexican and Venezuelan, shared ideas and started reform efforts in tune with their European counterparts (Beneitone et al., 2007; Beneitone & Yarosh, 2015; Brunner, 2009; Wende, 2007). If this reform effort takes root in the higher education system in the region, there were two key elements that would have a profound impact on the way Latin American universities function today. One is the competence-based education framework, the other, the promotion of student-centered pedagogy implicit in a credits system that reflects the actual time, counted as credits, a student should devote to achieve learning goals (Alarcón et al., 2013; SCT-Chile, 2013). Both serve the goals of convergence that allow higher education institutions to share resources and students in national and international contexts. The competence-based education framework and transfer credit system should create the conditions for introducing an active, student-centered pedagogy in the higher education system versus the pedagogical practice that today as in the past, was lecture-based (Alarcón et al., 2013; de los Ríos, Cazorlaa, Díaz-Puentea, & Yagüe, 2010; Harris, Snell, Talbot, & Harden, 2010; SCT-Chile, 2013; Wagenaar, 2014).

In 1998, the Chilean Ministry of Education, with a World Bank loan, created MECESUP. Its main purpose was to support the design and implementation of a voluntary accreditation process in the 25 public and older private universities belonging to the Chilean Universities' Council of Rectors (*Consejo de Rectores de Universidades Chilenas*). MECESUP, through competitive funds, started a program to improve the universities' academic infrastructure and accountability (MINEDUC, 2017; Reich, 2012). This was the first stage of an effort to achieve a long-term improvement of Chilean universities that spanned from 1999 to 2004. Next, with another loan

from the World Bank, the Chilean government initiated a second stage of MECESUP (MECESUP2).

The focus of the first stage was to develop academic infrastructure and more importantly, “the design and implementation of a Competitive Innovation Fund ... and the introduction of accountability measures” (Reich, 2012, p. 1). The second stage focused on academic innovation and the modernization of undergraduate programs and support for faculty development, primarily in their pursuit of graduate studies (PhD) and the introduction of “Performance-based Agreements” (MINEDUC, 2017). The strongest sign of policy change was the ending of the national Competitive Innovation Fund and the creation of the Academic Innovation Fund that had funded 371 projects between 2006 and 2008 (Reich, 2012).

Strong emphasis was placed on staff development and doctoral programs, moving away from a teacher-centered undergraduate educational model to a student-centered learning one, continuing support of innovation in academia, and improving academic management through institutional research and academic staff training (Reich, 2012, p. 33)

Competence-based education, academic innovation (in Chilean higher education pedagogy) and the credit system (known in this context as SCT-Chile) were and still are Chile’s MECESUP’s main curriculum design frameworks (MINEDUC, 2017). MECESUP presented guidelines to Chilean higher education institutions for introducing and implementing a competence-based education and credit system. The guidelines emphasized a participatory methodology. Consequently, faculty of each academic unit, in the curriculum design process, could further define the details, such as the profile of a professional graduate, the competences students would develop, the organization of teaching activities, the best-suited pedagogy and the student's credit assignation.

My consultant work with the engineering department in curriculum redesign under competence-based education and credits system started when MECESUP was expanding its reform program to its third phase (MECESUP3), intended to reach all Chilean higher education institutions with full accreditation. Phase three started in 2010 and planned to end in 2016. It focused, among other topics, on the redesign of the undergraduate curriculum “and [establishing] the synergy of regional higher education institutions with their stakeholders”(Reich, 2012, p. 3)

Later, while thinking on Roberto’s words and my reactions, I found that the work on curriculum development was key in faculty identity formation as higher education teachers, “when it celebrates and is explicitly informed by clearly articulated intrinsic values” (Neame, 2016, p. 3). Curriculum is founded in values, as Neame points out, and “values are intensely associated with identity” (2016, p. 4). Consequently, when confronted with the curriculum redesign, engineering faculty and I were negotiating a specific set of values, as the foundations of how we saw the learning goals linked to a specific professional profile, which identifies the ideal engineer, grounded in the demands from the field, that teachers of engineers want to contribute and influence. This task impels us to think about the role engineering faculty play as teachers and role models in the identity formation for their students. (I may add that working in collaboration with most of the faculty, from that moment, helped me regain the motivation and significantly lower my anxiety and worries about achieving the goals). The curriculum was then seeing as the framework of the learning environment for students and engineering teachers;

If teaching, for empathetic teachers, is an iteration of reflecting on the development of students, on one’s own influence on that development, and on the implications for oneself, then self-authorship must feature as an ongoing dimension of teacher identity also (Neame, 2016, p. 6).

Consequently, engineering faculty must face their professional mission as educators, as teachers of higher education. In that process I learned that the experiential study of higher education pedagogy is something unavoidable. By experiential study of higher education pedagogy, I mean the mindful, on-the-job analysis, assessment and improving one's own pedagogical practices, based on the disciplines that inform and guide educational studies, such as learning psychology, sociology and philosophy, to name the key disciplines. But, as Neame also states (2016), we must be aware of identity manipulation, as the result of external direct influence in curriculum development, which in practical terms means the imposition of a set of values from the outside. How do we, engineering faculty and I, avoid that?

I felt that some direction in the consultancy's terms of reference, the "official" definition of competence-based education and the criteria to define the professional profile, presented us with potential limitations to our opportunity to define values and identity. We must subvert that. And I think we did that, at least most of us, who subscribed to the final product of our effort, but not without hesitation, doubts and fears.

As per Roberto, he kept his opposition in a less outspoken manner. I failed to bring him in because at the time I did not know what Tali Sharot (2017) suggests, that in order to bring a person to our camp, we must build up from a common ground, a common interest and/or goal, which implies to be ready to compromise and genuinely make the other person feels in control of his or her decisions.

3.3 How Much Space Do We Have to Dance the Reform Tune?

Anxiety is part of the emotions that arises when we face any type of change, even when all parties agree and commit to innovate. When we face the task of educational change, soon anxiety naturally rises. I think that this is because we see the many stakeholders who are, direct or indirectly, in one or another manner, involved in decision making. Some of them would limit the opportunity of success in the proposed changes, some would facilitate them. Adding to this, it is the sense of responsibility to our students and society that those who are involved in education feel.

“This new version of the curriculum looks interesting, but it looks too new. I am afraid that we will have a strong opposition and difficulties in defending it upon presenting to the school’s authorities.” Juan expressed to me as his main concern. He felt concerned because as head of the department, he must put his face on this, although other department faculty would present and defend the proposal. They, the department faculty as a group, could also have decided not to go further and just archived the report and postponed any decision on changing the curriculum for a while.

Juan’s reaction was at a time when we explored integrating some current courses into thematic modules; limit the number of years of training from six to five and having an additional semester devoted to the degree paper. Each year of studies would be devoted to a specific engineering education theme. Underlying the proposed curriculum was the notion that the undergraduate engineering student was an “engineer in training.” The pedagogy then assimilates the notion of an engineer’s industrial manufacturing process plant. The proposed training methodology was “learning-by-doing” (Aldrich, 2005) that we finally agreed as the more suitable teaching/learning method to fulfill the goals of competence-based education.

Juan's worries could come from the fact that we discussed the concepts that framed the curriculum redesign, and as a result we introduced many changes to the direction and characteristics of the final product.

In redesigning the undergraduate engineering curriculum, MECESUP's guidelines (defined in the consultancy's terms of reference) posed an interesting challenge both to faculty and myself. First, we needed to understand and make sense of our educational and cultural context, by defining the concepts of competence and a credit system that were the basis for the student-centered curriculum (Alarcón et al., 2013). And then, how these two concepts related to the profile of the graduate professional engineer. These are the key parts that must interrelate in the curriculum redesign task. The faculty and I were at odds with the emphasis on employability, that appeared to be the end-goal of the whole conceptualization of competence-based education as we saw it in the official literature.

We shared reactions and apprehensions similar to Aboites (2010) when he criticized the neoliberal, market-oriented definition of higher education's role (to prepare students for the job market) under the Bologna Process (2010). Under this definition, faculty and I saw a crude limitation to the university's role in preparing new generation of professionals and in advancing knowledge and technology innovation. We all understood that the university was a place where participants endeavored to develop critical thinking, expand the mind to new horizons and pushed knowledge beyond the current frontiers in all aspects. In this vision, the university's role should not be limited to training the workers needed by the current job market and industry, but also in developing the students interdisciplinary, personal, and interpersonal horizons of possibilities. The problem with the emphasis on the job market was more apparent when we analyzed the description of the profile of the professional graduate (the result of a previous consultancy) before I arrived. It

seemed to follow a very narrow perspective under the employability perspective. Based on MECESUP's terms of reference for my consultancy, the task was to follow that profile to guide our curriculum design activity. However, this was not written in stone. Faculty and I understood that we had the freedom to modify the profile of the professional graduate, and so we did.

We then decided to revisit the profile of the professional engineering graduate. At first look, this profile appeared as a logical consequence of interviewing key stakeholders from the industry, the explicit job descriptions, and the result of some alumni stories about performance on the job. The profile's description was precisely what was expected from a classical engineer - technical. In that description, we could find some actualization in the demands, such as the ability to understand English as a second language, the use of engineering computational tools, teamwork skills, et cetera. But most of the engineering faculty declared that not all alumni with whom they had close and continuous communication, worked in the traditional position that the specific profile declared. And yet for most of us the term "employability" raises concerns, a problematic emphasis we too often find in the literature on the competence-based education (Aboites, 2010). This emphasis should not surprise us because, as Beneitone and Yarosh (2015) point out:

The development of competence based approaches to teaching and learning in higher education has been influenced by industry, where there has been a growing perception that new graduates are often unfit for the demands of the modern workplace, and from graduates themselves who have found that their range of skills and competences are lacking when they seek employment. (Beneitone & Yarosh, 2015, p. 188)

This is also very much related to the origin of the concept in David McClelland's research in the early 70s, which is closely related to job performance (Guerrero, De los Ríos, & Díaz-Puente, 2008). In Latin America we can find many examples of this emphasis in the introduction and most

of the papers presented at the “*Seminario Internacional “Currículo Universitario Basado en Competencias”*”⁹ (CINDA, 2005). So, we decided to define an alternate profile of the professional engineering graduate from which we could redesign the new curriculum.

The profile of the professional engineering graduate has an enormous implication for the competencies that students should develop during their studies. There are different competencies and related levels of development (the learning goals) for different possible avenues to career development that an undergraduate may pursue. Moreover, the university should create the educational environment for students’ experimenting in advance with these potential avenues or career paths. This is also key for maintaining a student’s motivation, which is the engine for learning. For example, an engineer may work as a chief operator in a process plant (which is the classical path for a structural, electrical, or metallurgic engineer); or being a specialist engineering product vendor (many engineers made his/her whole career in this type of work); or a public policy specialist at different levels of government; or pursue an academic career, involved in education and research; or create an engineering company.

Many engineering faculty involved in this curriculum redesign endeavor had followed the academic path, with little or no previous experience working in the classical field of a professional engineer. Each of these different professional and academic paths requires a specific set of competencies that must be in the undergraduate curriculum. Moreover, the integration of content and educational activities should be sequential, accounting for the diverse specialization at the undergraduate level that may take the form of major and minors. In this consulting work, engineering faculty and I agreed that this was the way to properly interpret the work at hand.

⁹ *International Seminar on Competence-based University Curriculum.*

During our discussions about the professional profile of engineers, I introduced a diagram (Figure 1) to help us visualize the correlation between work performance and its contents with those of the teaching process. The diagram's underlying idea is to see the lesson plans and curriculum organized in responding the active learning method approach. The pedagogical practices should present a realistic workplace environment, providing challenges and demands (learning tasks) similar to the ones an engineer should efficiently respond on the job. The discussions around the diagram also contribute to transfer and apply pedagogical specific knowledge relevant to the curriculum redesign task. I related to this discussion in the workshops I conducted with the faculty (see Section 3.4, Consulting as a Teaching and Learning Process).

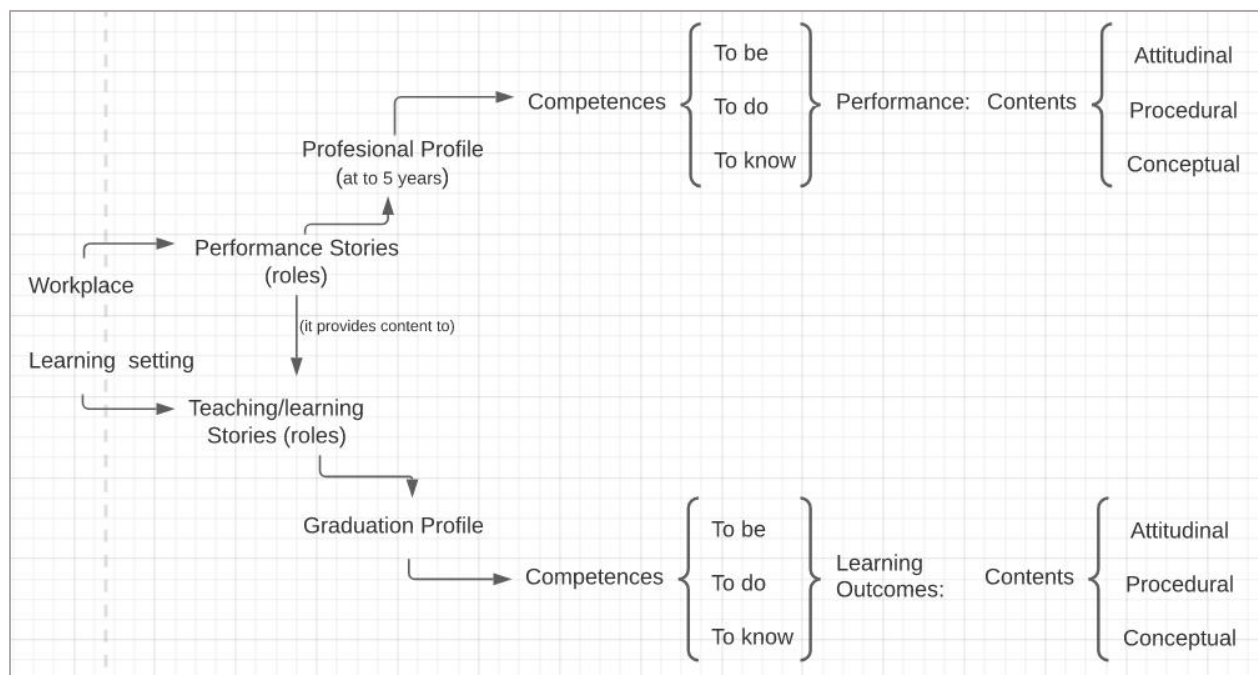


Figure 1. Parallel Between the Workplace, and Education Settings

While introducing competence-based education and a credit system, we were also preserving the role of the university as one of the key actors in contributing to the personal and

professional development of their students. Additionally, we remained conscientious about our shared responsibility in responding to the needs for comprehensive development of the region and country. That is an imperative and inescapable responsibility of educational institutions in a developing country. We can find similar visions and decisions in other Chilean universities, while in the process of introducing competence-based education. Such is the case of Universidad de Talca (Pizarro Quezada, 2014).

With this profile for the graduate professional engineer description resolved, we focused on the definition of competence. In doing so, we had a critical attitude to all definitions at hand. We treated MECESUP's and many others' as provisional definitions of competence. These definitions in our eyes were susceptible to being modified and enriched. For this, we based our criteria and agreement on the end goal of our educational endeavor, as it was defined in the previous paragraph. Consequently, our intention was to keep our agreed definition, so we can maintain our critical vision of the university's role in the integral formation of new generations of engineering scholars, professionals and entrepreneurs, while also responding to the demands of the country's developmental challenges and goals. We saw that the most efficient way to do so was by creating and maintaining an educational ecosystem that values and encourages the development and exercise of critical thinking; the development of personal autonomy and social responsibility; and free interchange of visions and ideas from diverse ways of seeing and doing. With this in mind, the faculty and I together rejected a utilitarian, limited market-oriented vision of the role of higher education in general and the university in particular.

In accordance with a more holistic vision of competence (Wagenaar, 2014), one can emphasize and further define three dimensions that should be present simultaneously in any competent person, which combine pertinent ways of knowing and doing while at the same time

expressing a specific type of professional identity (a way of being). Consequently, knowledge (**knowing**) is a dimension that is well recognized in education and in society. Education systems, both formal and non-formal, devote great energy in the acquisition of knowledge. **Doing** is a proper way to act in a certain efficient way. Usually, apart from some laboratories and hands-on workshops, education systems place less attention to this dimension than knowing. **Being** is a more difficult dimension to "teach", and evaluate. It is usually expected that personal development and maturity will do their job, and teachers at most could choose to be role models, just by being in front of students and being somehow charismatic. The way of seeing (and how it is expressed in communicating ideas, visions, thoughts) and the way of acting that are at the core of "naturally" representing the cultural environment, are certainly strong factors in modeling a way of "being." We may call this **identity**, as Coffey (1999) points out well for the case of ethnography, it also works for other professions: "In writing, remembering and representing our fieldwork experiences we are involved in processes of self-presentation and identity construction" (Coffey, 1999, p. 1). The faculty and I discussed this dimension at exhaustion, until we arrived to a consensus in which we are talking about identity. This consensus did prove important, because now we had a concept we could work with.

Professional identity may be seen, described, and modeled in the ways we act and interact in the ethical values we express and pursue, and in culture, that we help to construct and preserve. We can be conscious about it. Identity also may be seen in the way we use and adapt common spaces and the objects we put in there. And in the ways we are and interact in a specific profession. All these are ethnography's subject and object of study.

Having all of this in mind, we focused on a concept of competence that can incorporate all these three key dimensions: **knowing**, **doing** and **professional identity**.

Guerrero et al. (2008) identified seven approaches to the concept of competence: place of work, behaviorist, business strategy, cognitive, constructivist, humanist and holistic. Table 3 shows a summary of five of them, supported by these authors, that I consider relevant for higher education in Latin America.

Table 3. Approaches to the Concept of Competence¹⁰

Behaviorist Approach	This approach preponderates the behavior of individuals in the performance of the task and will observe specific results in a given context. Competences are developed by research, based on observation of excellent executors. It sets standards for results. Specifications of superior performance.
Cognitive Approach	Competences are attributed to cognitive activity defined as the "ability and willingness to act and interpret". On the other hand, when identifying the competences and their indicators is based on Bloom's taxonomy. This approach is common in many Latin American universities.
Constructivist Approach	It conceives competences not only from the function but also from a personal dimension for which it emphasizes people's training and the organization of work activity. They constitute a dialectical relationship between the training of workers and their progressive and coordinated participation in the activity carried out.
Humanist Approach	Competence is conceived as general human skills that are formed from the potential that the person has in relation to the environment. It focuses on the integral human development and refers to the formation of the reflective, creative and integral person. It arises from the need for action and experience in the globalized world.
Holistic Approach	Competence is defined as the result of a mixture of underlying personal aspects, such as communication, self-development, creativity, analysis and problem solving, which are called meta-competencies, which are the ones that allow the existence of cognitive, functional competences, behaviors and ethical values that together determine professional competence.

¹⁰ Author's note: I translated most of the Table's content loosely from Spanish with some personal additions.

To make things a little more complex, Tuning Latin America, in its third phase that ran from 2011 to 2014 (Tuning Academy, 2011) introduced the concept of meta-competences, that are the result of a holistic approach to competence-based education. Meta-competences are the result of clustering generic or transversal competences with subject/discipline specific competences for the purpose to guide curriculum design that focuses on a more active and comprehensive (holistic) pedagogy (Beneitone, González, & Wagenaar, 2014; Wagenaar, 2014).

To summarize, we wrote a short and comprehensive phrase that encompasses the breadth of competence in higher education. In our own words, a competence in higher education can be understood as the **ability of a person to act reflexively, strategically, and creatively in new situations, applying appropriate knowledge and resources, including personal and professional networks, and demonstrating an appropriate set of ethical values and attitudes.**

As we can see, the faculty and I spent most of the time in discussing and redefining the basic concepts and orientation of the undergraduate curriculum redesign, to the point of appearing “too innovative.”

Table 4 shows how the engineering faculty and I implemented the concept of generic/transversal competence to operationalize our concept of competence that serves as a curriculum design framework. To do so, we assigned each generic/transversal competence an engineering flavor. Each of these generic/transversal competences are comprehensive and serve all engineering specializations. The Functional Engineering Competences are those specific to an engineering specialization. The learning outcomes are expressed to show their level of achievement and contextualization. It also informs the teaching and learning process. To create the educational environment, the learning outcomes are direct to active pedagogy, problem- and

project-based education. Competences create the education framework that are operationalized using learning outcomes.

A learning outcome is understood as a statement of what a learner is expected to know, understand and be able to demonstrate after completion of a process of learning...indicate the level of competence that is desired and should be achieved.¹¹ (Wagenaar, 2014, p. 294)

In the way we approach the curriculum design task, we find that competence-based education presents an interesting opportunity for a relevant and contextualized educational reform if we see it from a creative perspective and preserve the academic autonomy that is the soul of higher education. We also found that student-centered pedagogy is best suited to create the teaching and learning conditions for students to achieve the learning outcomes and develop competences.

The credit system, which represents the quantity of time a student devotes to learning tasks (for example, attending lectures, lab work, team projects, seeking relevant information and data, reading and writing reports, etc.), also calls for the introduction of active learning methods, such as problem- and project-based learning (Lachiver et al., 2002). These active learning methods, in our proposed curriculum, are based on realistic scenarios with a story that presents challenges that reflect real situations (Schank, 1995, 2005, 2015). Students, working individually and collectively, are asked to propose solutions, take risks and learn from errors in metacognitive exercises. These are the basis of “learning-by-doing” teaching/learning methods (Aldrich, 2005; Schank, 2015).

¹¹ Italics are from the author

The emphasis now is on the student, who takes the whole responsibility for his or her learning process.

The self-regulation by students in the transformation of knowledge into practice becomes more central. Students are given more responsibility in their learning, that preparing them for today's turbulent and dynamic (professional) environments, as well as lifelong learning as such (Koenen, Dochy, & Berghmans, 2015).

Competence-based education and the credit system as presented here, show enormous potential for improving students' learning achievements (Koenen et al., 2015). But at the same time, as we discovered in the consulting endeavor, the challenges for instructors were great, more so when most higher education faculty had little or no training in higher education pedagogy. In addition to these challenges, the following issues must also be addressed to ensure the success of competency-based education and the credit system:

- (i) the institutional traditional culture developed through the years that emphasizes a type of curriculum centered on lecture-based teaching;
- (ii) the existing problematic differences between full-time and part-time faculty (the former, who have all benefits and power to elect university authorities at all levels, and the latter, with almost no representation and participation in the institution, even though sometimes they made up the majority of faculty in many universities);
- (iii) the contradictory situation where research and publication in refereed journals are highly valued in a university environment where most faculty devote the entire time to teach, with little real support and recognition of teaching.

All of these factors are huge and impose heavy limitations and strong challenges to reform higher education in Chile and Latin America. Many of the above situations were the product of i)

brutal repression that universities suffered under dictatorships and the forced introduction of a neoliberal model in the early 1970s, especially in Latin American's Southern Cone; and ii) the installation of an organizational system that aborted the participatory reform process of the late 1960s in the region. The introduction of competence-based education and a transfer credit system may have opened a much-needed door to a long overdue reform. But, as we have seen here, this is not exempt from pitfalls, especially because its strong orientation to neoliberal policies in a globalization context. These are great challenges for faculty who want to make a difference and move to a more relevant and responsible higher education system. One that is open to contributing and satisfying the needs for national development, channeling for this purpose, the creative energy of the academic community (teachers, staff and students).

Table 4 Example of Engineering's Transversal, and Functional Competences & Learning Outcomes.

	Competences ¹²		Learning Outcomes
Transversal Engineering Competences	1. Apply the method and the scientific tradition to model the behavior of products, systems and processes	1.1.-	To follow procedures in the collection of information about a product, system or process
		1.2.-	To build product models, system or process, considering information about its structure and properties, variables that define its state and the scientific laws that restrict or govern its behavior
		1.3.-	To simulate behavior through models, define and solve problems associated with products, systems or processes
		1.4.-	To design and execute experiments to obtain data or observe behavior of products, systems or processes
		1.5.-	To assess the quality of models and experimental data as a representation of the products, systems or processes
		1.6.-	To integrate the previous steps (1.1.1 to 1.1.5) into a feedback and iterative system of learning and explanation
	6. Update and develop their own competencies, autonomously	6.1.-	To make autonomous training decisions following a specifically personal professional profile.
		6.2.-	To keep informed of new developments in your specialty through professional and academic publications
		6.3.-	To use electronic platforms and professional networks to exchange and deepen their knowledge

¹² The numbers are not sequenced in this table, because they are taken from a list of objectives that follow a different order.

Table 4. Example of Engineering's Transversal, and Functional Competences & Learning Outcomes

(Continued)

	Competences ¹²		Learning Outcomes
		6.4.-	To participate in scientific and professional societies
	Competences ¹³		Learning Outcomes
	7. Contribute autonomously and originally to the generation of models and courses of action	7.1.-	To elaborate own judgments ones based on experience and personal reflection, which may be critical to established knowledge
		7.2.-	To produce ideas or proposals without prior validation, at the risk of dissent
		7.3.-	To propose, develop and implement innovation actions or changes without the need for external control or protection from hierarchical superiors
		7.4.-	To contribute to change and innovation with respect to people, with diplomacy, ethics and sense of opportunity
		7.5.-	To apply models of innovation and intra-entrepreneurship, ensuring the promotion and protection of creativity
Functional Engineering Competencies	9. Design, manage and evaluate engineering projects in metallurgical processes	9.1.-	To identify and quantify requirements, problems, opinions of clients and users, impacts on the environment and ways of solution in a conceptual engineering context
		9.2.-	To establish specifications applying codes, standards and protocols, assuming legal responsibility when appropriate
		9.3.-	To manage projects, working in multidisciplinary teams, according to the standards and best practices available
		9.4.-	To apply the engineering sciences to the modeling of products, processes and systems using computational tools
		9.5.-	To apply quality procedures in document management and project information
		9.6.-	To conduct impact assessments of design decisions, using product or system life cycle criteria
	11. Develop a metallurgic business	11.1.-	To develop contact networks for the collection of information and the search of partnerships for the financing and concretion of businesses
		11.2.-	To conduct studies to identify and evaluate investment opportunities
		11.3.-	To develop metallurgical business proposals and their financing for negotiation with investors or development funds
		11.4.-	To conduct entrepreneurship exercises to materialize metallurgical business projects

¹³ The numbers are not sequenced in this table, because they are taken from a list of objectives that follow a different order.

Today, with respect to the issue that Juan pointed out, I see a perception of weaknesses that he might share with other faculty. A weakness that may have several sources, such as, their own preparation and experiential background in the proposed pedagogic method, or on the novel curriculum organization in themes and modules, although we had an interesting example to follow from the Université de Sherbrooke, in Canada, which we considered in our curriculum decisions.

The faculty of the Electrical Engineering and Computer Engineering programs at the Université de Sherbrooke in Canada in collaboration from the university's school of education faculty developed a complete program combining problem-based learning (PBL) and project-based learning (Lachiver et al., 2002). They found that PBL "is very effective for learning declarative and procedural knowledge in fundamental and engineering sciences" (Lachiver et al., 2002, p. 3) , but it "is not well suited to allowing design and project management skills to be developed at the desired level throughout the program" (Lachiver et al., 2002, p. 3). They note that "project-based learning provides an authentic engineering environment and promotes 'real-world' skills intended to simulate professional situations" (Lachiver et al., 2002, p. 3). The program lasts the whole undergraduate curriculum of eight semesters. Each semester is organized around a theme that is worked combining two weeks problem-based learning and a project-based learning that lasts the whole semester. The weight of each modality changes as the student progresses in the program.

So, during the curricula, the focus on solving problems decreases to give more liberty to students to apply their competencies to projects. A faculty team is in charge of all activities during a given semester (Lachiver et al., 2002, p. 2)

Another possible source of conflict that debilitates Juan's confidence may be Roberto's opposition to the current curriculum change effort. At the start of our meetings, Roberto statement

was: “I cannot understand why we need to change what we are doing. We have been very successful. All our students get jobs even before they graduate.” Another two among the seven department’s faculty showed doubts at various moments. Jorge expressed concern about the debilitating faculty’s authoritative position in the eyes of the students that the student center approach might bring. Patricio saw that the effort had a fundamental fault because the whole process was not conducted by an engineering expert on engineering education. (A direct allusion to my background as teacher, that makes me nervous, felt weak and impelled me to defensively demonstrate my knowledge and professional and academic background).

“I have nothing against Rodolfo, his expertise and experience -Patricio commented- but most of the cases I saw in our university and other Chilean universities, is that the curriculum consultant has ties to schools of engineering in Chile or in Latin America (I had ties to the School of Computer Science at Carnegie Mellon University in the US). He has experience and knowledge of the field, but other people may use his background against the proposed curriculum, if they want to torpedo the initiative.”

And Patricio was right. My own background in professional education, as a teacher, not as an engineer, could work against our curriculum redesign effort in the eyes of faculty from other engineering departments, some of whom would be the evaluators of the proposed curriculum. Again, we are facing the issue of bias, theirs and mine.

“Of course, there is opposition to the idea of change, here at the department and in other departments in the School of Engineering—Guillermo commented. I also do not like the way that the Ministry of Education and the mainstream literature define competence. I am happy that we were able to discuss this and agree on a more in-depth, educational sound definition that serves as our guide for the curriculum we are proposing. I am confident that this is a good one, although

very novel, and can be seen as an ideal curriculum for now or for the future. I am not troubled by that.”

Guillermo acted as my best counterpart. I learned a lot from him, his experience, his thoughts about engineering education, that is based on extensive experience as an instructor, head of the department and his graduate studies in Germany. Also, a contributing factor was that he represented that special mix of engineer’s mind (he taught me that engineering comes from the “love of engines”), that includes artistic inclinations (he plays music and belongs to a chorus, that interpret baroque music and chants), and knowledge of humanities and philosophy. We spent hours talking about interesting topics. He was also key for me in navigating the department and university cultures. He encouraged to expand my understanding with key university stakeholders to understand their ideas and position on the curriculum reform. He also suggested to visit, at that time, a controversial department, whose main field of study was product design engineering. That I should use that information to support my work with our faculty. This move was very useful in dissipating my worries. It also helped me in ameliorating the perceived disadvantages (my own unconscious bias) that my professional background may present. And, as important as the above, it helped me in gaining confidence that I was doing the work right.

In this context, we received the visit of Teresa, the academic director of a metallurgic engineering department of a Spanish university. I knew about her visit just the day before. Juan told me in passing, without much importance. That way we used to pass information covering the real purpose.

“Ah! I have to tell you that tomorrow we will have Teresa’s visit, a colleague and friend from Spain. We decided that you should present to her what we have done to see her reaction. She

is willing to assess your work with us and give us some direction. Your presentation is scheduled for 8:30 tomorrow morning.”

This was a big surprise for me, not in the good sense. My mind works in tandem with my emotions of fear and anger that surged from my belly to my throat. I felt threatened and disrespected. I did my best not to express that and accepted the challenge. I had only hours to put together and prepare an organized presentation. My decision was to accent the foundational criteria, such as basic definitions of a professional profile of a junior engineer, the holistic concept of competence, the active student-centered pedagogy and the proposed main curriculum innovations.

“I am very well impressed by the advances you have developed with the as department so far,” was Teresa’s reaction. “We at my department and at the university as a whole, are still struggling in the ways we can move from the old ways of doing to the challenges of the new, that competence-based education posed. May I have your presentation, so I can use it with my colleagues back in Spain?” I felt relaxed. I passed the test, gaining confidence on knowing that the faculty will have more confidence in my knowledge and abilities to lead this curriculum redesign process, and on their own decisions based on hours devoted to this redesign.

It took me months, and maybe years, to accept (beyond the intellectual understanding) the fact that there were many things to consider in understanding the hesitancy and feeling of insecurity that Juan expressed. This was confirmed by the invitation by the Spanish colleague to review what we were doing. I must take into account here the emotional stress that results from the dialectical interaction between the subculture of a small engineering department with the larger macro cosmos of a School of Engineering, and of the university as a whole. At the School of Engineering level, we must acknowledge the presence of many different engineering identities that

are based on the specialties and job hierarchy position in industry and beyond, that in turn result in the prestige positioning inside the profession (not all engineering specialties have the same position in the job market, and I discovered that same value position hidden in the minds, subtly expressed in hallway attitudes and sayings). The result of this, is the uneven power presence and weight of the stakeholders in the decision-making process in the School of Engineering. Juan and other department faculty wanted to be sure that they can defend the proposed curriculum innovations with more confidence knowing that we were not far from what was the trend under the competence-based education framework. To have that assurance from a European colleague was a plus, at least emotionally.

To what extent can we, at this department level, be novel in our curriculum redesign effort? How far can we stretch the elastic of innovation before it is cut? Even if we were unanimously in agreement, there were many stakeholders in the decision-making process along the route to have the go for the proposed curriculum redesign from the School of Engineering. Higher education organizations are complex and not a culturally uniform environment.

“This university has a strong technical and engineering mentality that characterizes all of us who study, teach and work here. In most cases, faculty who teach here are also alumni of this university. This is the way we, maybe unintentionally, preserve tradition and the culture that characterizes us.” Miguel, a senior faculty from another engineering department, told me. I met him as part of the move to bring different perspectives into our work. Miguel led a similar effort in his department, one of the larger and older engineering department in the university. He also was an important authority in the decision-making process. A key person to have as an ally or at least to guide us in the ways to a successful defense presentation.

Following on Miguel's statement, I realized that that perspective on the university culture was shared by almost all people at the university, as well as outsiders, who have in one way or other, knowledge of or interaction with people from the university. It seemed at the time that I was immersed in a well-integrated organization, that shared structure, an enacted environment, and values among all members.

Smerek (2010) cites the work of Martin and colleagues (Martin, 1992) in identifying three perspectives in the study of cultures in academia: integration, differentiation, and fragmentation. The integration perspective focuses on "homogeneity, harmony, and a unified culture with the unit-of-analysis being the organization... It stresses actions which are consistent among employees, the shared meanings of stories and jargon, and the internally consistent ideology of an organization" (Smerek, 2010, p. 383). The differentiation perspective in the study of higher education culture emphasizes an in-depth inquiry beyond the generalizations that identify a culture from the outside. "Researchers from this approach observe subcultural conflicts, power, and differences between stated attitudes and actual behaviours" (p. 383). The fragmentation perspective highlights the lack of sharing long lasting objectives and vision among members of a higher education institution, "culture in a higher education context may be more plausibly explained by a world of unclear goals and irresolvable time-conflicts and tensions, with no clearly-defined unitary culture" (p. 384). If I take Miguel's and others' words, it seems that I am facing a clear example of the integration perspective in viewing this university's culture. Is that so?

"We are characterized, and like to believe so, that we are very technical oriented people - Guillermo once told me- with hard stubborn wired mind, that feels good with well-established hierarchy, where each one plays a clear role; like in an industrial processing plant. We must

consider that this university was founded by an industrialist to satisfy the needs of the processing and manufacturing industries. We preserve that orientation in our daily academic activities.”

While I was reaching out and met with adjunct faculty and students, I had several lunch meetings in the main university’s cafeteria. In one of these meetings one students ask me

“*Profesor*¹⁴, how are you enjoying having lunch in the Titanic?” The other students laugh!

“I do not understand,” I said

“Well, *profesor*,” another student replied, “did you notice the foyer at the entrance of the main door, and then the stairway that goes to the second floor where the faculty have lunch?”

Then I laugh with them. Of course, it was almost identical to the stairway in the James Cameron’s movie The Titanic, that connects to the dining room where the first class ate. There and then I understood what the respect of hierarchy was in the culture of the university. That dining room was exclusively for full-time faculty. Adjunct faculty were not allowed to have lunch there unless they are specifically invited by a full-time faculty. There and then I understood the unwritten rules that my colleagues at the department fear, when Juan expressed his concern about the path that the curriculum redesign was taking. The majority of faculty at the department felt good with the direction of the proposed curriculum. But they feared that maybe they did not have the power to overcome potential opposition from more powerful traditional stakeholders, who may well share Roberto’s ideas.

“Here some people see with nasty eyes those who innovate too much. You already spoke to the director and some faculty in the department of product design engineering. Did they tell you how difficult was to get the go ahead in the creation of that department? Still, many in the School

¹⁴ Spanish word for teacher. In Chile this word is in use for everybody who teach at K-12 and higher education levels.

express their contempt with that department. They say that it does not belong to an engineering school. That they should be in an art department, out of this university.” Patricio, who got his doctoral degree in another Chilean university, and is not an alumnus of this university, commented with a serious look in his eyes.

Observing more in detail who is who, the faculty and students’ interactions, and the contents of my conversations, I started seeing the conflicts, the confederates and their foes; the hidden rivalry between departments; visions in conflict about the role of the university and higher education in general in the country. The year I was working there was also a year of strong students’ mobilization and street protests against the state of the country and the role of higher education in the country’s evident troubles with equity and social justice.

This situation also played a role in Juan’s and the other faculty’s concerns. Clearly, a perspective closer to the differentiation perspective, maybe combined with a fragmentation point of view, may facilitate the cultural analysis of the different, diverse and maybe divergent forces at play in the reform efforts in this university. I could feel the same conflicts and contradictions I experienced while I lived and studied in the country, many years ago, combining with my activism in the pro-democracy movement of the 70s and 80s in Chile. The same anxiety, fear, anger. I empathized with Juan and the other faculty at that moment.

I also felt that maybe not everyone really wanted the change that the Ministry of Education was promoting. Maybe many do not think that change was necessary or maybe if it was necessary, the whole direction of the policy was wrong. And yes, it could be wrong if we, the higher education people had no agency over the whole reform process that includes the capacity to redefine key concepts, even the direction the reform would take. I concluded with Guillermo and others that that agency was key and we must proceed in the dream for change. I took a similar stance when in

my early days of higher education experience, in the early 70s, I was an active participant in the university reform efforts, at that time as a student activist, a dream that the Pinochet's coup d'état killed in 1973. Now, at the time of the consulting, we could contribute (I could contribute) in recreating the opportunity for change. "Let's be realistic, demand the impossible," I told Guillermo once, while I remembered Herbert Marcuse's words in that French Spring of 1968, when French students went to the street calling for social change.

Guillermo and I and many of the faculty lived similar experiences in Chile, at the end of the 60s and early 70s. I was a student activist at that time, and now, working as a consultant, I felt the same energy for change, mixed with the responsibility of proposing something doable, technically robust, and politically possible. We faced a different reality now, or were we? Maybe we were facing similar forces of that of the past reform events, forces energized by the profound emotional currents that gave life to a conservative mindset (that even revolutionaries had), that made real and profound change so difficult. I understood Juan and others. Of course, we were facing a reality that presented a big challenge to our vision of an appropriate and relevant curriculum under the competence-based education framework. But we must persevere, I thought, supported by Guillermo's solid conviction that we were on the right path. If we were not successful now, what we were able to create now, could feed the reform efforts of future generations. Isn't that the dream of every revolutionary?

3.4 Consulting As a Teaching, and Learning Process

In this section, I aim to explore consulting as an explicit act of personal and interpersonal transformation process, as a deliberate teaching/learning process. We may say that from most

human interactions we learn something, most so if we are consciously seeking to learn. Is it possible that consulting is also a deliberate act of teaching and learning, in a non-formal education setting? If so, what would be the characteristics of that sort of consulting? When I was confronted with the consulting task, I played the expected role of a consultant, as I understood based on previous experiences and others' expectations: clients and institution's staff. I was a consultant who follows the directions of the terms of reference from the contractor's agency; scheduling activities accordingly; focusing these activities that combines diagnostic's results and the mandate from the terms of reference; and as a final act, producing a report. Soon, forced by the challenges posed by the curriculum redesign task, the faculty and I entered an uncharted territory. We had to develop new skills, knowledge, attitudes (competences) to respond appropriately to these challenges. At that time, I thought that I may adopt a teacher role to properly guide the curriculum redesign process. Was this decision a result of my most inner motivation in life as teacher or a consequence of the demand from this task of reforming higher education?

Consulting can be seen as a transfer of knowledge, in the form of expressing the intellectual foundations of prescription and/or advising, that come as a result of a diagnostic assessment that focuses on patterns in the institution and the identification of people that facilitate, limits or obstructs the desired changes toward a goal. Goal(s) that is(are) constructed by the consultant in her or his interactions with key stakeholders in the organization, especially with the originator(s) of the project for which a consultant was hoped (Wergin, 1989). Consulting may also be seen as a process of learning (beyond lesson learned point of view), as a personal transformation process for all key actors involved in deliberation and decision-making toward institutional change (even at a very localized dimension, as it is in a school's department), which affect institutional policies and practices.

“We, at the School of Engineering, are looking for an international expert in higher education curriculum to work with us in redesigning the undergraduate metallurgic engineering curriculum. This expert should be familiar with the competence-based education trends and experiences in Europe and Latin America, he or she must be fluent in Spanish, and knowledgeable of engineering education.” This was my first contact with Soledad, the university’s international relations director. Having all the requirements, I agreed to taking the job. From the beginning I understood that the task was not just a routine curricular updating work, but a transformation of the teaching and learning, from planning to practice, that the competence-based education philosophy explicitly professes.

I felt strongly motivated with this opportunity to be part of a process of change at a manageable level, in a small university department, which can be seen as a case study for a more ambitious change at the school level or even at the university level. Later I knew that most of the School of Engineering’s departments already went through this curriculum redesign or were in a very advanced stage. They were looking to complete this task in one of the few, if not the last department that should move into the new type of curriculum. As soon as I knew this, my motivation suffered a small set back. I sensed trouble. An accumulation of failed reform attempts in Chilean higher education institutions, that I played a small part before coming to the US, hit me as a tsunami of emotions from my almost forgotten memories. Usually, the last in joining the movement has little say but follow the trend that earlier adopters already decided. Usually, there is little room for innovation or personalization, much less to play a lead role.

I entered the field with these feelings, figuring out how to behave, how to do the job in a meaningful way, at least for me, and not lose the initial motivation. I am a person who has difficulty keeping my motivation against all odds. Maybe a conditioning that comes from a long chain of

frustrations and defeat in the hand of powerful conservatives, a condition that I may share with many of my progressist country men and women.

“If you say that we must start with students’ motivation and treat our students as junior engineers from the moment they enter the program, then we should take into account what motivates them? --Guillermo commented. What does motivate a person to invest time and energy to be a professional in this field? What is an engineer?”

“Well, maybe it is the motivation to learn the methods and techniques to come out with an ingenious and practical solution to a problem, using or developing technologies in doing so.” It was my naïve answer. I assumed wrongly that the term and concept of engineering come from the Spanish word *ingenio*, that primarily means resourcefulness, inventiveness, mastery, cleverness. A term that correlates with the English word ingenuity.

“No, engineering refers to the love of machines, the love of engines.” Guillermo corrected me with the empathy and dedication of a good teacher. “So --he continued--, the first task from the teaching perspective should be to develop the engineer’s basic competences working with basic machines, in an engineering practical workshop that develops in complexity as she or he advances in the program, during their years of education. A workshop that serves as an introduction to direct her or his motivation toward learning to be and act as an engineer, in the first year, and increasingly more complex engineering tasks, as a roundup of each year’s main theme,” Guillermo concluded.

In Guillermo’s eyes, I sensed the excitement of finally having the opportunity of realizing his dream. His vision of the way how engineers should be educated. An obvious decantation of years of teaching experiences, contrasted by analytical revision of his own learning process as an engineering student, and instructor. I felt lucky and privileged to have a partner with whom I would learn the fundamentals of another academic and professional field, at a very high intellectual level.

From him I also learned how to be a teacher of our peers without being patronizing or lecturing, just using the conversational methods that old philosophers of antiquity used (at least, I want to believe so).

“What if you conduct a series of lectures or workshops on higher education pedagogy?” Fernando, who was finalizing his period as head of the department at the moment of my arrival, suggested. “I think that we really need something like that, so we can understand each other, making this process less difficult for us all” –he pointed out.

From the beginning Fernando was open to the changes that the redesign demanded but unsure about the direction I was proposing for discussion and decisions. I liked this idea, mostly because it came from him, who had a good reputation in the School of Engineering and the respect of his peers. I felt somehow supported, which helped to lower the level of my anxiety that sometimes was high as the sky. This teaching activity would also work to soften the rough edges that come from Roberto's attitude of rejection, I thought at the moment.

This was also an opportunity to bring to the table the apparent conflicting views about the need for curriculum redesign, critically addressing the changes on pedagogical practices that competence-based education promotes; and, what appeared urgent and relevant, the whole matter that the primary occupation of faculty at a higher education institution is to be a teacher. This idea opened the possibility (with its inherent challenges) to translate the education jargon into the specific linguistic codes of engineering, in general, and engineering education specifically.

“I will take the opportunity to conduct three workshops on higher education pedagogy: planning the instructional activities (the lesson plans) from a minimalist point of view (with the minimum wording as possible); writing and sharing the syllabus (and its role as a motivational and self-evaluation tool for teachers and students); conducting and assessing the teaching/learning

process (active, student centered pedagogical practices and process assessment); all the above, from a holistic and systemic curriculum framework. Guillermo, I will need your help in translating all these into the perspective of the engineer's mind. I want to bring into these activities the teaching/learning experiences of each faculty. To promote that, I need help from your perspective as an engineering instructor."

"Well, that is not that different from what we have done in our conversations about the task of curriculum redesign –Guillermo said. Because communication is a fragile enterprise, especially when we cross discipline's frontiers, I think that you and me have been involved in the translation business." He ended with a huge smile.

"I wish we will not be lost in that translation." I replied laughing. A laugh that was also an expression of relief.

This was also an opportunity to check the work we were doing on the curriculum redesign and my own approach as curriculum design expert. I planned to use a learning-by-doing methodology (Aldrich, 2005; Schank, 2005) in a workshop setting, building from the experience of the engineering instructors. Precisely, the method we were proposing was an active learning approach. The workshop was intended to work twofold: as a teaching and learning process opportunity on higher education pedagogy (as Fernando suggested); and, as an opportunity to go collectively further in our curriculum redesign work. Because of the faculty workload, as I said in a previous section, we had little time available to devote to the task, and now we had the possibility "to kill two birds in one shot". Although my intention was to motivate my colleagues to see themselves as "professional engineer educators" (Fink et al., 2005), my sense of reality told me that it was a mark of success if I engaged most of them in the following stages of the curriculum redesign process, or at least, support the final product.

Fink, Ambrose, & Wheeler (2005) point out that the cycle of professional practice of engineers that they use to address engineering problems, can also be used to address educational challenges, from planning to conducting to assessing progress and to evaluating the final product.

Thus, the cycle begins by first identifying the educational problems. The generation, implementation, and evaluation of solutions should take advantage of the body of knowledge in the cognitive sciences and educational research as well as knowledgeable educational experts, a resource often found in campus teaching and learning centers. The cycle concludes by disseminating the results so that they may be adapted and used by others. Through this cycle of professional practice, engineering faculty members can create a new and more powerful form of engineering education (Fink et al., 2005, p. 186)

My task with the workshops was to demonstrate that we can use the cycle of engineering professional practice to improve our pedagogical practices in higher education. I felt very confident that this approach would work, after I shared my plan and received feed back from Guillermo.

In planning and conducting the workshops I followed Roger Schank's (1995) approach in using stories that help situate the challenge to address and open opportunities to develop skills in responding to that challenge. It is also a powerful motivation as the stories develop in direct relation with each student/participant's role they play in the stories' development. The challenge I posed was the task of lesson planning in resolving a specific engineering problem that students should resolve in class and in the laboratory, applying cognitive, communication and attitudinal skills; and at the same time, that the lesson plan should be in conformity with the curriculum's active learning "philosophy," and the credit system criteria.

Basically, to address the demands that come from the curriculum redesign task we were addressing, I intentionally kept as a "hidden curriculum" the discussion about the educator's role

of the engineering faculty. My idea at the time was to avoid exposing bias before the opportunity to go into that issue after having the experience of working as educators, resolving the educational challenges. In retrospect, I was doing precisely what Tali Sharot (2017) suggests in confronting bias with some potential for success in changing the mind of the others. The acceptance of the other's situation, and concerns, and build consensus from common goals, or change one's mind based on information that helps achieve a sound resolution. At the end of the day, I may say that I got partial success on this, but a complete success in finding the right support to going forward, officially working with Guillermo on a regular basis, as the counterpart from the engineering side.

All of us were involved in an informal experiential learning process (Kolb, 2014). We combined formal (the workshops) and informal (meetings and presentations) settings to educate ourselves while we responded to the demands in redesigning the engineering undergraduate curriculum. Still it lingers in my mind the issue of taking educational consulting as an opportunity for a teaching and learning experience, maybe under Kolb's (2014) or other model of experiential or work-based learning. In retrospect I believe that if I planned the presentations of the advances in the redesign process as a combination of a lecture (along with learning goals and assessment strategy, using for example the Socratic method) and a conference paper presentation, open to peer discussions for improvements, I would be transforming the consulting from a traditional approach to a more explicit educational experience for all involved. In all interactions during the consulting, conflicting points of view and misinterpretations were often present. But who learns and grows without that?

The interesting fact is that all our interactions were devoted to higher education pedagogical issues and decisions. Any of these can be seen as an opportunity to introduce (teach?) concepts and practical considerations on the teaching and learning process, only if, I planned this

discussion and decision-making process more as an educator than as a consultant. The Socratic method of advancing a reflexive mode in our work felt right. For example, when we introduced ABET criteria (ABET, 2010) and the CDIO (Conceive Design Implement Operate) standards (Bankel et al., 2003; Castelli et al., 2010; Edward F. Crawley, 2002; Edward F. Crawley et al., 2011; Penttilä & Kontio, 2016; Popp & Levy, 2009), we came to agreement on the pedagogical methods that underly the curriculum we proposed.

The ABET criteria and the CDIO standards helped the engineering faculty and me to direct our decisions on the pedagogy we would propose for the curriculum we were designing. Active learning and innovation pedagogy made a lot of sense to us. The engineering faculty saw the importance of a learning centered curriculum and hands-on activities, but also a combination of pedagogies where lectures must be present, because teachers have the responsibility to model the specifics of the intellectual modes of the profession. These are more important in the first year of undergraduate engineering education. Also, in an engineering context, the process of continuous improvement is important, so was not difficult to foresee its application in the teaching and learning process. What causes a strong tremor among engineering teachers was the 9th and 10th standard, “enhancement of faculty competences.” How can we do that? How can we develop a curriculum that takes into account the instructional competences teachers need? Most of Latin American universities are teaching universities, devoted most of their time to train professionals in diverse fields. But higher education pedagogy is not a specialization we can find in education schools. Even offices created to manage MECESUP¹⁵’s projects inside the institution, do not have staff or programs to devote to faculty instructional training that introduces or supports changes in

¹⁵ Higher Education Quality Improvement Program (MECESUP).

pedagogical practices. Such is the case for the third more important Chilean university, with 15 years developing MECESUP's programs, 400 out of 1600 faculty have taken courses or workshops on higher education active pedagogy, elsewhere, by their own initiative (Varas, 2017).

We missed and needed research that looked into this phenomenon in-depth. But we strongly suspected that we were facing difficulties where planning and reality collided. In planning, we saw a perfect and logical sequence, even when we took potential difficulties into account. This is more notable when clean technocratic approaches were in place. But time and time again, reality rebelled and showed its challenges to logic, more so when the humans agency entered the scenario.

Cultural and political aspects intersect when it comes to implementing public policies. How could we respond to these implementation difficulties? Perhaps the key is with greater participation from teachers and students, based on an open proposal from the government. This should have been a proposal that leaves spaces for creativity, diversity of answers and projects; a proposal that opens avenues for creative dialogue between all actors. Standardization and technocratic solutions are always an enemy of these participatory actions. But perhaps this is the only way that can open the horizons to the change that is needed today. The history of the Latin American university reform efforts of the mid-1960s show that this is possible to achieve. Recently, the Chilean Federations of Higher Education Students promoted this topic for discussion, pushing for a participatory process to reform higher education in the country.

In the meantime, the engineering faculty and I had to respond to the curriculum design that demanded a guide to relevant pedagogies to propose. So, active pedagogy was the one we would propose, a comparison between Problem-Based Learning (PBL) and CDIO appeared precedent (see Table 5).

Table 5 Some Key Differences Between PBL, and CDIO Syllabus

PBL	CDIO Syllabus
Focuses on how students should learn	Focuses on what student should learn
Strongly relies on workshops and teamwork where instructors take the role of mentors and guides	May have laboratories and workshops, it also contains disciplinary courses
Applies to a broader type of education	Is specifically designed to engineering education

Although PBL and CDIO show these and other minor differences, they can be effectively combined, as many experiences show (Edström & Kolmos, 2012; Karpe, Maynard, Tadé, & Atweh, 2011; Kulmala, Luimula, & Roslöf, 2014; Liang, Deng, & Tao, 2011). Liang et al (Id) interpret the CDIO teaching method as a combination of practical focus, teamwork activity and project development where instructor and students actively interact.

An example that combines the PBL and CDIO Syllabus approach is reported by Lingling et al. (2012). They see that,

CDIO emphasizes the importance of engineering practical teaching, emphasizes to train the students the abilities of active learning, practice, problem-analyzing and problem-solving, and emphasizes to train the vocational skills, professional ethics, as well as teamwork and communication (Lingling et al., 2012, p. 25).

In the experience reported by Lingling et al., a project-driven approach is taken that is based on a constructivist learning theory. As in PBL, instructors play the role of mentors, organizers, helpers, and facilitators of student work. Teaching is based on cases taken from the real engineering work, and then organized as an engineering project where students learn by doing. The focus is on solving practical problems following the CDIO lifecycle. A similar approach is

reported by Karpe et al. (2011), where project-based learning activities also promote self-directed learning using learning-by-doing methods.

For example, at Turku University of Applied Sciences, in Finland, a combination of the PBL and CDIO Syllabus was applied in an introductory engineering course in the form of a capstone project (Kulmala et al., 2014). Capstone projects, as defined here, focus on the development of a set of specific, generic or transversal competences while students work as a professional team toward a final deliverable. This deliverable must satisfy the client needs. This type of approach works as a game, with rules in place that create a realistic environment that reflects as much as possible the real work environment of an engineering company. This same approach, emphasizing the learning by doing and the realistic story, based on Roger Schank's approach (Schank, 1995, 2005, 2015), can be found in the graduate studies at Carnegie Mellon University, for example the Master of Information Technology in eBusiness Technology.¹⁶

The faculty and I already had all the information on the table, and the decision to implement an active pedagogy, emphasizing a creative combination between lectures, hands-on activities, laboratories, field work and visits. The focus was on solving challenges, problems and tasks from the real world, where engineering competences were required. Having all this clear and knowing that this decision implied a different university faculty instructional training than we had. Then, the next step was to find relevant experiences and modalities of engineering faculty instructional development. Of course, the time was not in our favor to do that. The consulting terms of reference did not consider that, and not all engineering faculty were convinced that they needed that. I cannot

¹⁶ <http://www.ebusiness.cs.cmu.edu/>

speak for each of them, but only myself, and for me this experience was a whole person learning experience.

4.0 Reflection

It is my belief that I completed one important step in my learning process (as a whole person self-transformation) by analytically revisiting my educational consulting experience using autoethnography. A process that took several years, which could be reduced to less time, if from the beginning I was clear about the method, which should combine the foundational criteria of qualitative research methods with autoethnography and reflective introspection (I would add mindfulness meditation).

If I had to repeat this education consulting experience, I would start my field work with a stronger formation in the autoethnographic method (the one I have today). I had a good start anyway. I was fortunate to have good methodological support at the time of the field work as a consultant. Although I had just one course on ethnography (Development Education & Applied Anthropology) with the late Dr. John Singleton¹⁷, I was lucky enough to have the support of Dr. Singleton with whom we met on a regular basis, before and after the field work, until sadly his health deteriorated. With him I explored ethnography as a tool for learning. Then he introduced me to the work of Dr. Heewon Chang (2008). Dr. Chang graciously shared with me her book on autoethnography via Dr. Singleton. Later I had another opportunity to improve my knowledge of ethnography, doing an in-depth work on autoethnography when I took Field Methods. From that formal training that combines with courses on qualitative research methods with Dr. Noreen

¹⁷ Emeritus professor at the Administrative and Policy Studies Department (APS) of the School of Education, University of Pittsburgh)

Garman¹⁸ I arrived at the conclusion that autoethnography may be a sound method to productively enter the personal, intimate experience of the educational consultant.

As Sara Wall (2008) states, doing autoethnography is harder than we think. Wall points out the anxiety about self-representation to convey the sense of identity and self-understanding, a matter of authenticity and truthfulness, but also a honest presentation of the self that makes us, autoethnographers, more exposed to the judgment of the other, “I was afraid that my readers would think less of me if they knew what I ‘really’ thought” (Wall, 2008, p. 41). About this I recall the controversy that the publication of Bronislaw Malinowski's diary (Malinowski, 1989) provoked among fellow anthropologists, as Raymond Firth mentions in his second introduction of Malinowski's diary (Malinowski, 1989, p. xxi). Readers saw Malinowski the person, in his cultural and social positioning (that works as conditioning of the self) in an intimate way. As Raymond Firth states in the first introduction of Malinowski's diary:

... this is what he intended because it was his faults and not his virtues which he wished to understand and make clear to himself. Whether or not most of us would wish to emulate his frankness, we should concede its courage (Malinowski, 1989, p. xix)

I might say that Bronislaw Malinowski's diary acts as a clear mirror of ourselves. An analytical mirror, in the case of this study, that I turn to my-self (auto) in a cultural context (ethno) applying the social sciences and humanities analytical tools (graphy) (Wall, 2008). In that process, I assume my own human condition as imperfect, and because of that, subject to learning.

¹⁸ Emeritus Faculty, APS

In Chapter 3 (A Consultant Self-exploration) I communicate my introspective analytical process in the methodological framework of autoethnography. In each section of this chapter, I focus on the dialectical cultural encounter between the faculty and I, as an educational consultant, highlighting the feelings and emotions and personal coping strategies on my consulting experiences in curriculum redesign efforts; and, as a teaching and learning process.

Autoethnography gave me, the educational consultant, the tools to cause my inner self to emerge, while I revised my experiences retrieved from field notebooks and memory. Ethnography of the own self allows me to gain awareness about the complex process of the whole learning person, a recognition of the transformation of the self that is possible when I expose to my critical gaze the surface and deep currents of myself rooted in my actions, thoughts, and feelings in a specific situation, that is the education consultancy on curriculum redesign. In the context of this study, I revised the educational consulting experience using autoethnography with the explicit aim to achieve awareness about my learning process as self-transformation of the whole person. To be able to achieve this goal, I am convinced of the need to have a robust training on ethnographic research methods and on introspection techniques (the self-observation of thoughts, emotional states, feelings, and sensations). In my experience, autoethnography combines both, which I would hope that I conveyed that to the reader of this study.

A key first step in all new consultant relationships is entering the space of clients to whom all significant activities will be carried and goals achieved. So, the key theme is to present an identity and to negotiate the kind and extent of role(s) to play. What autoethnography brings is a unique method to gain mindfulness about this task, that happens at the subconscious or semi-conscious level. Luckily, there is significant literature on consultancy with good analysis and clues on how to face this challenging first step establishing consultant-client relationship in the field (S.

Adams & Zanzi, 2012; Czarniawska & Mazza, 2003; Kolb & Frohman, 1970; Pasmore, 2020; Seefeldt, 1985; Verlander, 2012; Wergin, 1989). Key in my introspection were the work of Hammersley & Atkinson (1995); LeCompte & Preissle (1993), and Coffey (1999), whom look this issue of entering the world of the other from an ethnographic perspective, that I found more useful and coherent with my methodological approach.

Having bias as the underlying theme of section 3.2 (Where Are We Coming From, Where Are We Going), it made me realize that what I was seeing as bias against the education field and profession from at least one of the faculty, was also shared by me, in a reactive way by feelings of inferiority, that made me react with anger and frustration. To notice bias on others could work as a mirror of our own bias, if we are conscientiously looking into oneself, bias that are not different from the ones we reject, but as the other face of the same coin. At the time of the consultancy, I did not have the intellectual and emotional tools I have today, so I missed the opportunity to really confront the opportunity Roberto presented, not only to engage him with our curriculum redesign work, but for me successfully face my personal feelings of inferiority and the stereotyping the others, what now I understand as a way to avoid looking me in the mirror that others, not so kindly sometimes, present me.

One of the opportunities in my learning process was presented when I was analyzing my thoughts and emotions while reading my field notes around Roberto's saying and my reactions. To understand better the issue of bias, among several readings, I read Eberhardt book, *Biased: Uncovering the Hidden Prejudice That Shapes What We See, Think, and Do* (2019). In the Introduction she told a powerful story that illuminates how biases work (and caused me the "satori" moment, of illumination, of mindfulness); bias that are emerging from the shadows of our mind (Jung, 1968), and also, that reading presents it with a clue to a path that may facilitate the

weakening biases. There is the story of an African American police officer who was working undercover. He told Eberhardt that one day while he was walking on the street, he saw in his back a person who did not “look right” (his words). He was able to see the reflection of the guy in the building’s wall windows behind him, and the shadow extended in his side. The undercover officer felt threatened and quicken his steps, the guy did the same; it seems that the guy had bad intentions. At that moment the officer decided to confront the guy and abruptly stops and turn to him, looking him in the face,

“He stops too, and I look at him face-to-face,” the officer said to me. “And when I look in his eyes, a shock went through me. I realized that I was staring at myself. *I* was the person I feared. I was staring at my own reflection through the mirrored wall. That entire time, I was tailing myself: I was profiling myself.” (Eberhardt, 2019, p. 6)

Another theme that I develop in this study, responds to the second guiding question: to what extend is the consulting work affected by the perceived and real limitations for faculty’s agency in reforming undergraduate engineering curricula? Here the focus was on the conflict that faculty and I faced as the result of perceived potential barriers when a small department decided to introduce many innovations in the curriculum. A view of a more segmented and heterogenic organization allowed me to highlight opportunities for change in the person of key allies in the university. Strong consensus among faculty at the department level was key to go forward with changes in the way we defined competence, expand the definition of professional profile, introduced a completely different curriculum organization, and agreed on active learning pedagogical practices.

The consultancy’s terms of reference did not give me the task to propose a strategy for implementation. The complete task to introduce competence-based education and credit system

was divided in three different independent consultancies. The first was devoted to defining the graduation professional profile; the second (the one I did) tasked with curriculum redesign; and, the third focused on assessment and evaluation. This approach was against the way I understood and learnt curriculum design. Curriculum must be seen from a systemic perspective, that comprises the graduate professional profile that informs the learning outcomes and the pedagogical methods, and learning environments and activities, the criteria and process of assessment and learning evaluation. All these components are organized in a system, organizing them in a location and in time, this is how I see curriculum. Therefore, I grouped the three-separate consultancies into one. In this way I assumed a responsible position, collaborating with the engineering faculty in dealing with the politics of reform, that for me was to see beyond and behind the constructed image of the organization and collaborated in finding avenues that facilitate change by building consensus and alliances in a differentiated and slightly fragmented organizational culture (Martin, 1992).

Finally, with respect to the third guiding question (Can consulting explicitly be an act of education?), I may conclude that education consultancy is naturally an intrinsic act of education by the “magic” of its topics, maybe if that consultancy falls in the participatory realm, as in the case of this study. I recognize that not all education consultancy is planned to be a participatory task. But, even so, as all personal experience, educational consultancy can be seen as an opportunity for learning. I present here, in many places that. As the section develops, I see myself clearly not just as a learner but also as a teacher, who planned as a transfer of knowledge and practices, the workshops and most of the interactions with the engineering faculty. The learning outcomes are very difficult and maybe impossible to evaluate, due to the characteristics and intentions of any consultancy, which is everything but learning. Although, the consultant impact on faculty learning cannot be evaluated, I, as the educational consultant, can see the transformative

power of the experience on myself, that is completed only by the analytical effort I report in this study.

My aim with this study is to show how autoethnography can help an educational consultant achieve on-the-job whole person learning (Rogers, 1980). A self-transformation goal that may be achieved by critical reflective introspection and evocative writing, using the analytical tools of social sciences and humanities. The education consulting task involves the same themes that one is consulting about, namely the organization of the ecosystem that frames teaching and learning and the practices enacted in that ecosystem. Education consulting focuses on key themes that are constituents of the field: instructional design, lesson planning, pedagogical process assessment and learning evaluation, pedagogical practices, and pre- and in-service teachers' education. The ultimate goal of these elements is to enhance learning and personal development for all parties involved. Thus, education consulting, in my perspective, would involve a deliberate action of education of the self and of the others. Autoethnographic education consulting is the way to make this possible by a process of critical introspection into the self, to bring light into the complex ecosystem that comprises our emotions, sensations, thoughts, desires, and conditioning, and in that process achieve self-transformation.

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