Higher Technical Education in Chile (HTVE): The Duoc's experience

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(H)TVE over the years

- Origins TVE in Chile: Catholic Congregations focused on the poorest (illiteracy, over 85%).

  - Mid 1850s "school of trades" for workers, as opposed to humanistic secondary education (school coverage < 20%).

  - Debate on the focus should TVE should have.

- Inacap and Duoc were created in the late 1960's.

  - Inacap associated with Corfo's industrialization strategy;

  - Duoc, with the Universidad Católica to assist illiterate workers.

- Beyond specialized courses, post secondary education (HTVet) started in the 1980s with the reform. Secondary school coverage over 90%, and foreseeable increase in demand for higher education.

Duoc's origins

- A Catholic University students' initiative inspired in the 1968's protests, the Cuban revolution and the social role of the Catholic church in Latin America.

  - Focus on helping poor workers and peasants (Departamento Universitario Obrero Campesino).

  - No formal financing, volunteers

  - How to teach if students don't read.

- Between 1973-1980 Higher Education in Chile was a turmoil and Duoc, under the umbrela of the Catholic Church, was a relatively quite place. It started to experiment in a small scale with new teaching methods.

The HiVet

- In the 1980s the higher education statute changed, providing a space for HiVet (recognition of post-secondaty institutions, non-university titles, though bias (for profit and some financing)).

  - Inacap, Duoc, and Aiep started their expansion.

- Enrolment explosion, presures for more government financing. Since 2001 students from HiVet become eligible for government financing.

Goals

- Reduce University-HiVet bias (perception, financing); defining that HiVet is neither a substitute nor a step for universities admision.

  - Over 100,000 students; 2,500 staff and 4,000 teachers, need to standarize; curriculum update.

  - Employment of those admitted as the single most clear objective (i.e., droput included). Quality control (indexes)

  - Firms, and surveys to change curriculum and enrollment (e.g., Tourism)

  - Studies unit to evaluate programs and to act as a counterpart of external evaluations.

  - The Good Teacher profile (PhD?)

- Adapt to a new student profile and obsolescence of abilities.

"Results"

- Largest enrollment in the whole Higher Education sector 8.8% of total in 2019.

- Highest accreditation; only U. of Chile and the Catholic University had that level.

- Increased partnerships with private sector:

  - Arauco, and CMPC that donated about US $15 million each, and got involved!

  - Premio ICARE (entrepreneur association)
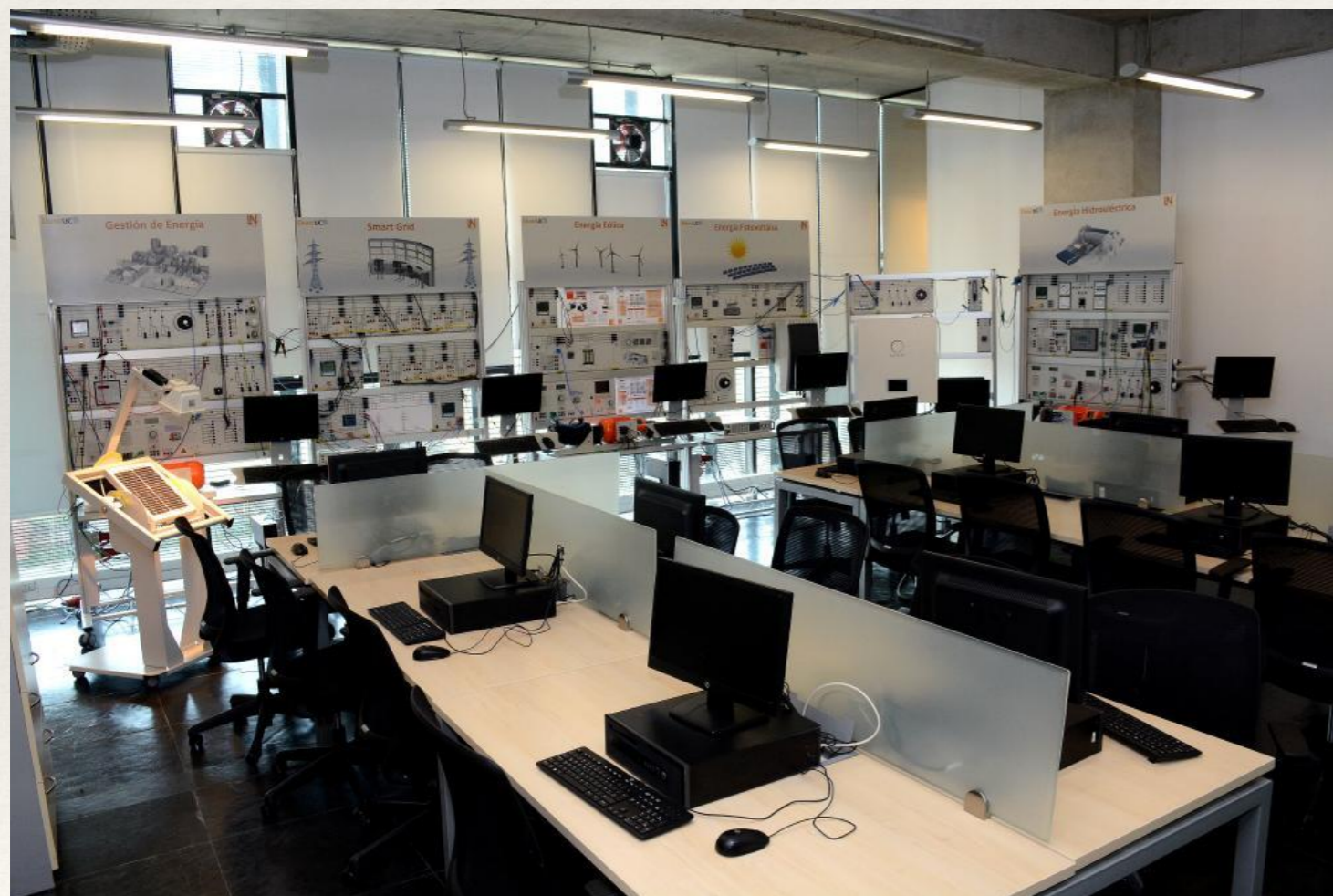
Facing the new challanges (pre Covid)

❖ Updating "laboratories" (the easy part)

❖ The disciplinary curriculum (the hard part).

The easy (though expensive) part

❖ Diagnosing the technology

   ❖ Recognizing good practices (e.g., Germany, Canada, Brasil).

   ❖ State of the art in Chile (SFF, Asimet, CChC, etc).

   ❖ Reforming the (formal) curriculum HiVet*
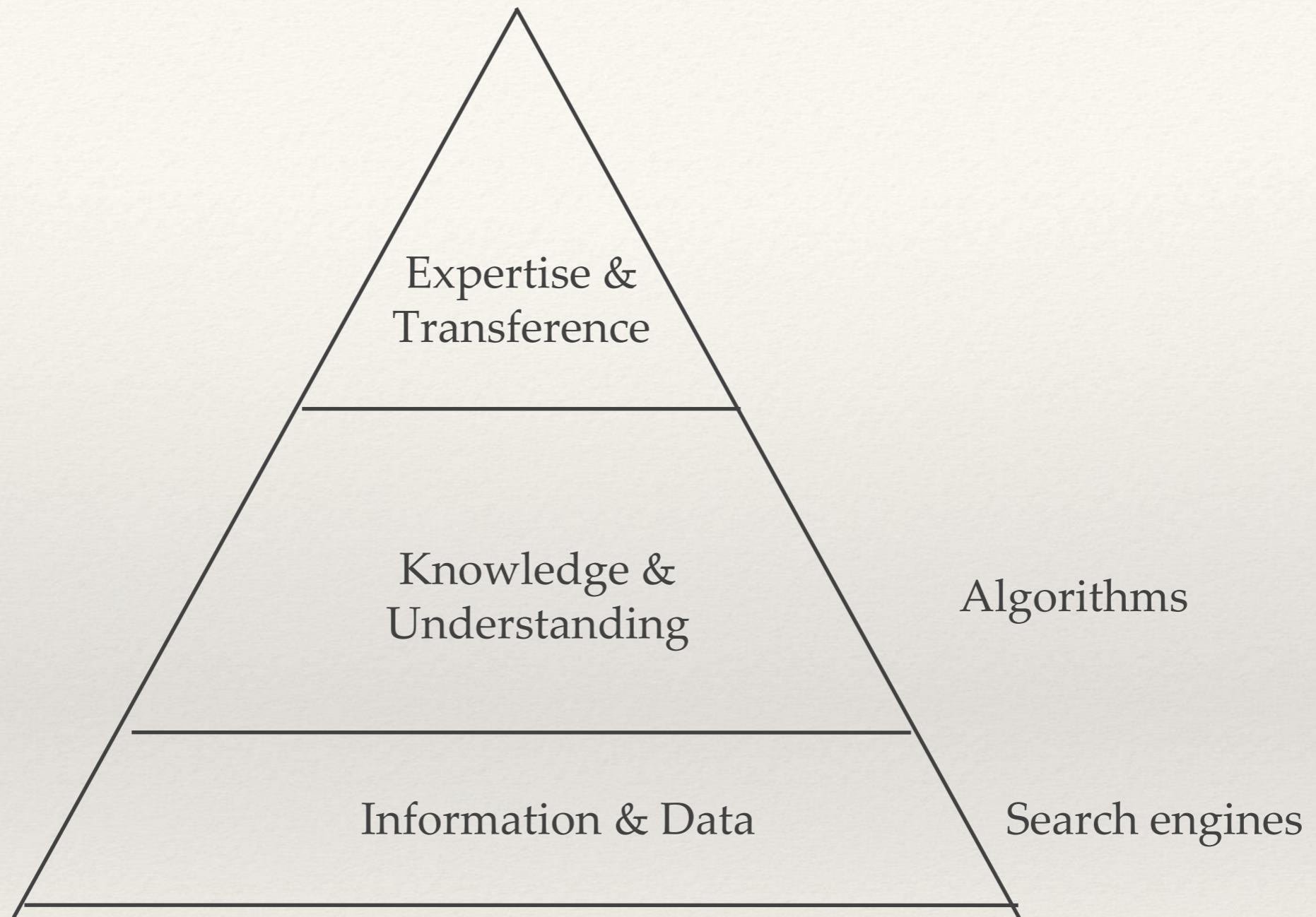
Robots

Simulación

Big Data

Industria 4.0

Realidad
Aumentada

Sistema
intregración

3D

Internet de
las cosas

Cloud
Computing

Ciberseguridad

Fuente: AMET

TÉCNICO EN MANTENIMIENTO ELECTROME-CÁNICO

ESTACIÓN DE CARGA AUTOS ELÉCTRICOS

The difficult part

Expertise &
Transference

Knowledge &
Understanding   Algorithms

Information & Data   Search engines
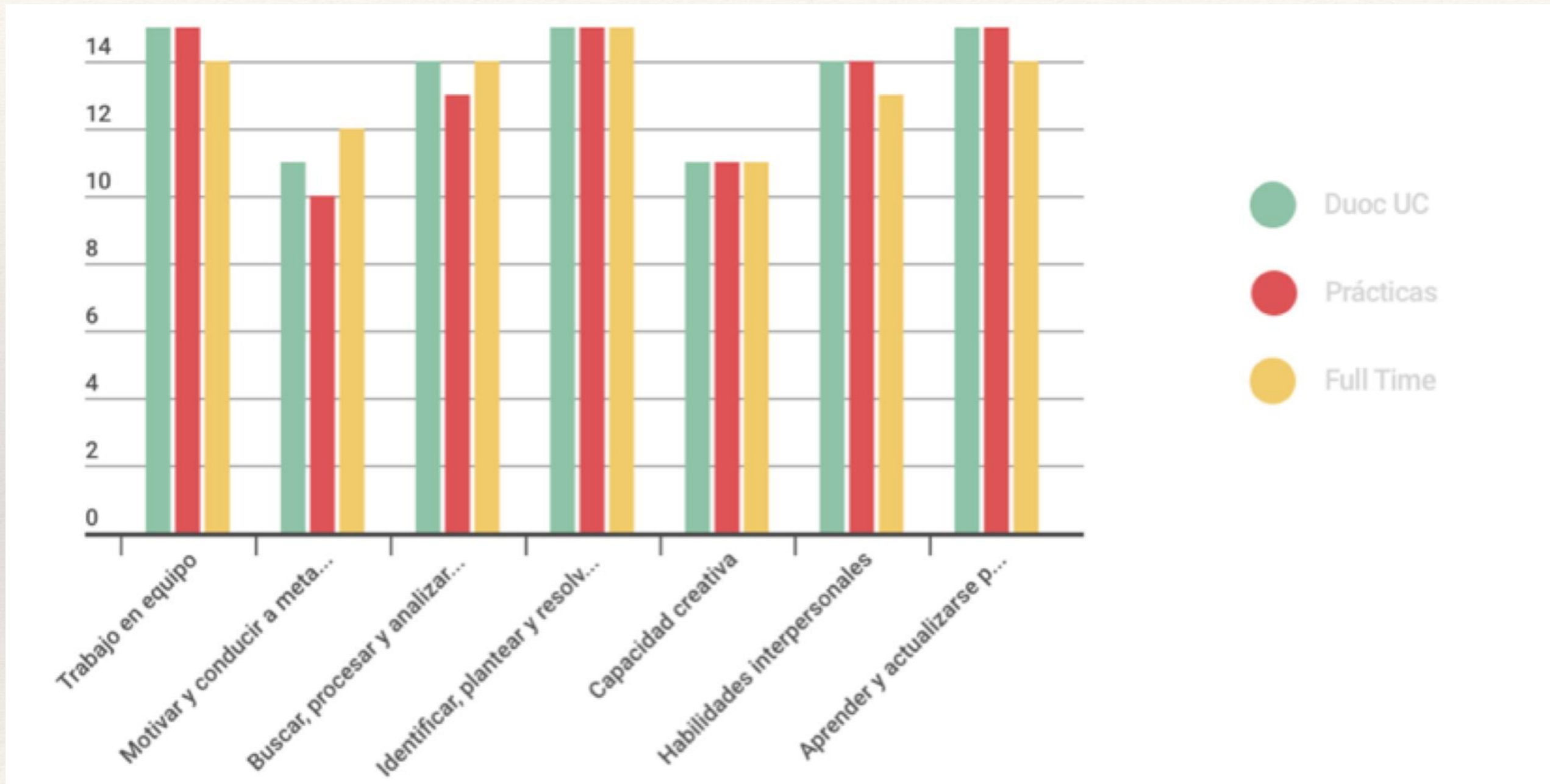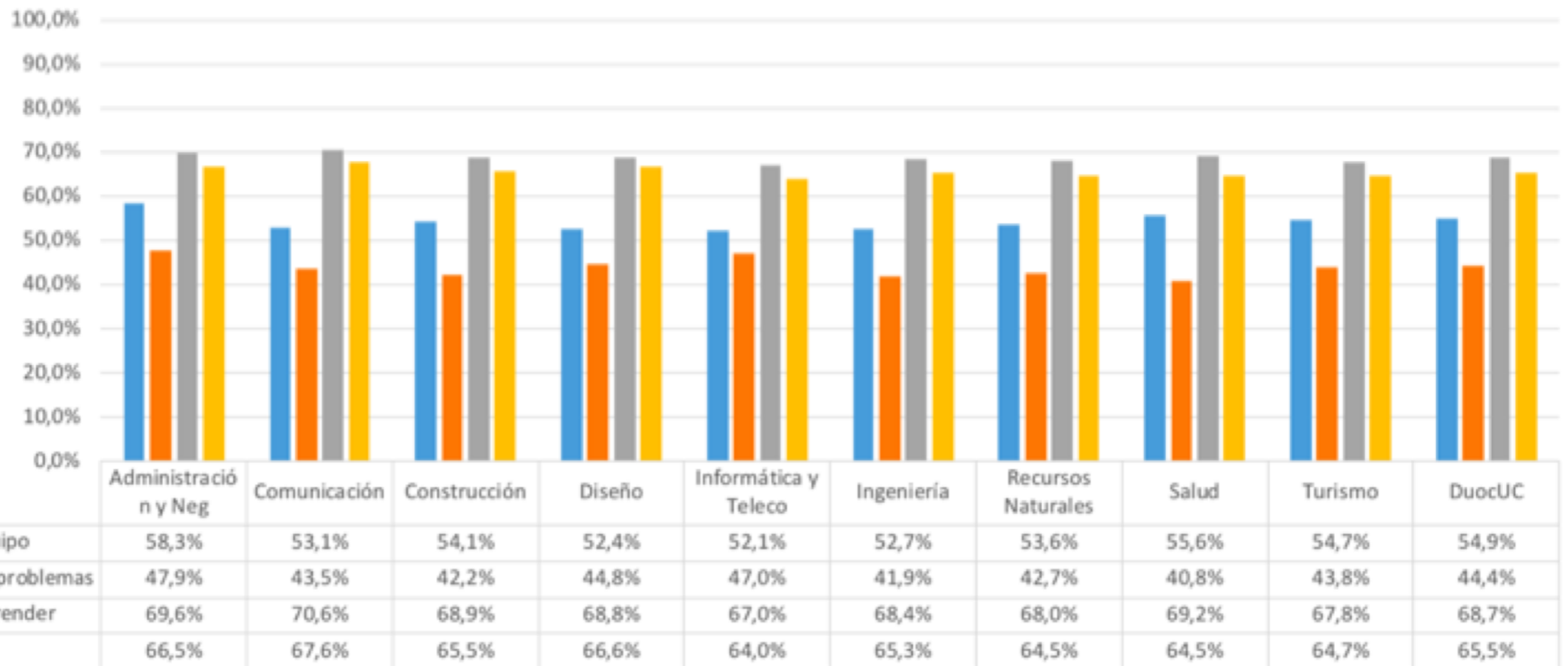
Defining competences, metrics and manage them

Most demanded competences for Duoc UC graduates

Introducing employment abilities (beyond the discourse)

- ❖ Ascribe to a competence framework (Tuning-LA; problem solving; teamwork; communications skills; leadership).

- ❖ Define a threshold, measure and manage.

  - ❖ Duoc UC baseline, 30,000 students evaluated in 2018, "situational" vs "self perception" starting with 2 competences, since 2019, 6).

  - ❖ Reform the curriculum (into the disciplinary courses; repetition is key).

- ❖ 800 teachers trained.

Baseline 1st year students in 4 competences, level 1 (non functional).

	Administración y Neg	Comunicación	Construcción	Diseño	Informática y Teleco	Ingeniería	Recursos Naturales	Salud	Turismo	DuocUC
■ Trabajo en equipo	58,3%	53,1%	54,1%	52,4%	52,1%	52,7%	53,6%	55,6%	54,7%	54,9%
■ Resolución de problemas	47,9%	43,5%	42,2%	44,8%	47,0%	41,9%	42,7%	40,8%	43,8%	44,4%
▥ Aprender a aprender	69,6%	70,6%	68,9%	68,8%	67,0%	68,4%	68,0%	69,2%	67,8%	68,7%
■ Creatividad	66,5%	67,6%	65,5%	66,6%	64,0%	65,3%	64,5%	64,5%	64,7%	65,5%

An example: <u>Critical thinking</u> in the classroom

❖ A meta cognitive process involving abilities that allow deriving logical conclusions to an argument or to solve a problem (Dwter, Hogar & Stewart, 2014).

❖ Two main problems:

  ❖ Too many concepts (Kennedy, Fisher & Ennis, 1991; Pithers & Soden, 2000; Lai, 2011; Dwyer, 2014)

  ❖ No tests in specific domains (Ennis, 1989; Bailin, 2002; Willingham, 2007).

  ❖ Need to move from a testing culture (memorizing contents, easy to evaluate), to an assessment culture (abilities, complex to quantify) (Dochy, 2001)

How to promote it?

❖ Language: promotes critical thinking, but requires the use of more complex syntaxis

    ❖ more difficult to improve in short periods; more difficult to evaluate.

❖ Mathematics: does not necessarily promote abilities of higher order (critical thinking).

❖ Technology is not necessarily the way.

Developing tests

- Why us? because context is key

- Test and work leaded by Damian Guelerstein and includes 6 post graduate students.

  - Domain: language, open questions

- Design

  - Literatures research; Expert Panel

- Validation

  - Think-Alouds, Interventions, Statistical analysis, Expert Panel.

Otra vuelta al mundo
en menos de 80 días

After reading the story, do you think it is possible to go around the world in 80 days?

Multicultural relevance:
Taiwan, China, Chile, España

Cultural bias.

Results

- ❖ Valid tests

- ❖ Conation (mental process that defines action, motivation, persistence, energy) is key.

- ❖ Difficult self and peer evaluations.

- ❖ Self evaluation, particularly biased for men.

- ❖ What teachers do we have

  - ❖ need to re qualify them.