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Shaping 21st Century Skills: Towards Sustainable Curriculum Development Through Pedagogical Supervision



WHY THIS TOPIC?

Understanding curricular processes is crucial for adapting to today's new dynamics and challenges.

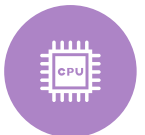
STUDY OBJECTIVES



1 Characterize the perspectives and proposals of skills for the 21st century from different international organizations.



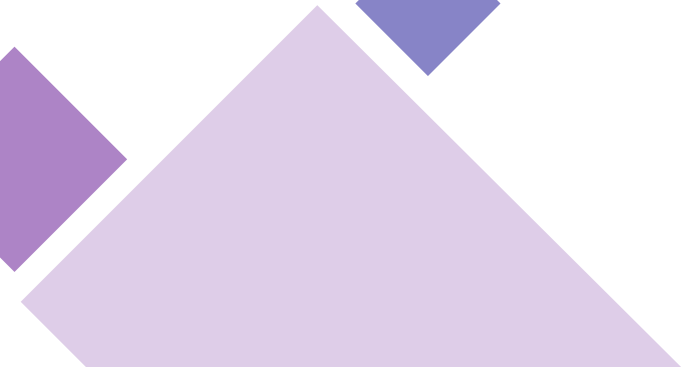
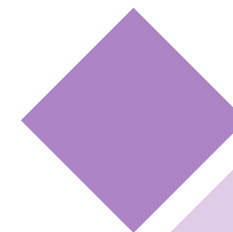
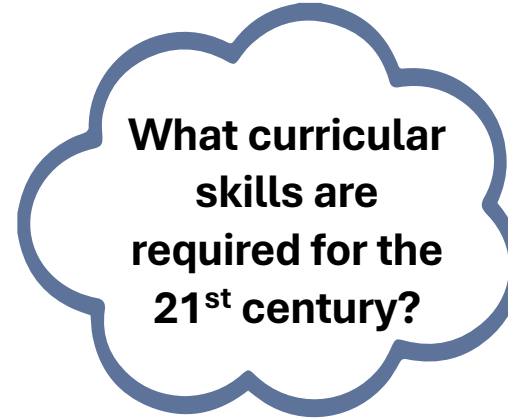
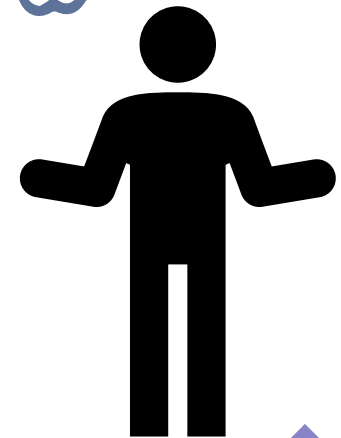
2 Characterize the perspectives and proposals of skills for the 21st century from different national (Portuguese) organizations.



3 Propose a summary framework of the skills required for the 21st century, based on documentary analysis of the various organizations' proposals.

RESEARCH QUESTION

What curricular skills are required for the 21st century?



THEORETICAL FRAMEWORK

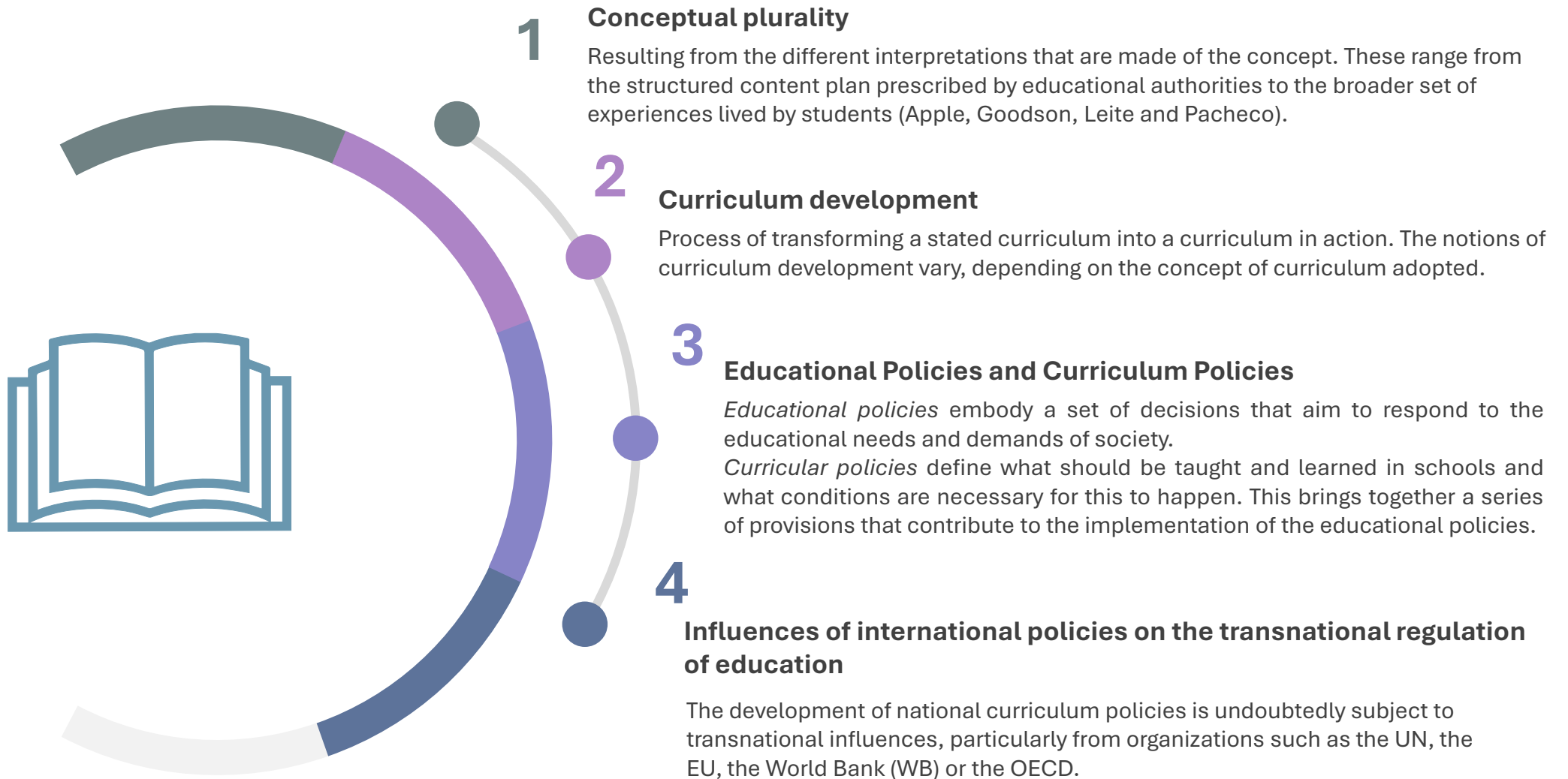
1) THE CURRICULUM

2) COMPETENCIES

3) CHALLENGES OF THE 21st CENTURY



CURRICULUM



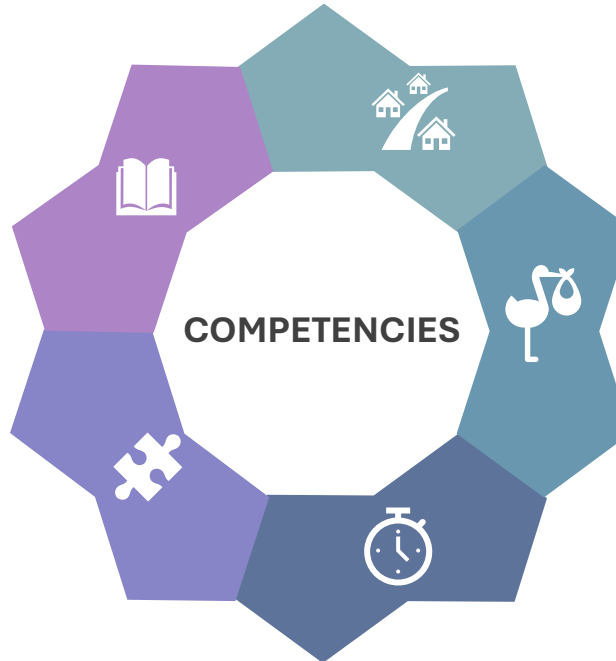
COMPETENCIES

Conceptual historical introduction

There are many conceptions of competencies, highlighting, for example, the perspectives of authors such as Bellier, Bourdieu, Défélix, Le Boterf, Pacheco, Perrenoud, Roldão and Tardif.

For the 21st century

This makes it possible to observe in the literature a varied range of categorizations of skills for the 21st century, considering different dimensional conceptions.



Integration and application

In contemporary educational practice, there is **an increasing emphasis on the integration of skills and competence-based approaches** into the design and operationalization of the curriculum.

Neighboring concepts

The interchangeable use of the term “skill” and “competency” makes it often appear diffuse and poorly defined.

Skills - aptitudes or proficiencies acquired through learning and practice, covering cognitive, practical and interpersonal domains (strict).

Competencies - have a broader scope, representing the integration of skills, knowledge, attitudes and values necessary for effective performance in different contexts.

Conceptual provenance

Wittorski describes that competence results from the combination of five components – cognitive, cultural, affective, relational and practical – articulated on three axes – (1) individual or group level that produces competence (Micro); (2) immediate social context (Meso); and (3) organization level (Macro).

Le Boterf places them on three fundamental axes: (1) person (biography, socialization), (2) training/education and (3) professional experience.

GLOBALIZATION

FACTS THAT DEMONSTRATE CHANGE

CHALLENGES OF THE 21st CENTURY



- **Growing investment in digital technologies** with impacts on employment and daily life.
- **Macroeconomic interdependence** between nations.
- **Disparity in wealth between different socio-economic groups** leading to social tensions, conflicts, extremism and a less safe world.
- **Population growth** which intensifies competition for scarce resources and generates severe environmental impacts.
- **Increase in migratory flows** of refugees and internally displaced people – for environmental and security reasons, but also due to the liberalization of labor markets.
- Dramatic **changes in food consumption patterns** around the world lead to health problems.

These changes are reflected in the trends observed in the demand for **21st century skills**, which now require a **holistic and interdisciplinary approach** that promotes not only academic knowledge, but also practical skills, socio-emotional skills and a comprehensive understanding of the complexities of today's world.

EMPIRICAL PART OF THE STUDY

1) STUDY METHODOLOGY

2) RESEARCH CORPUS

3) THE PROCESS



METHODOLOGY

05

DATA VALIDATION

- **Triangulation** of the different data sources from the frameworks and embodied by the researcher's and the supervisor's vision.

04

DATA ANALYSIS

- It was subdivided into two phases: 1) **Content analysis** of perspectives from national and international organizations towards the skill framework; 2) **Coding** (in MaxQda) **and content reanalysis** after preparing a skill summary table.

03

DATA COLLECTION

- It took place via **Document Analysis** – which involves a systematic method of examining and evaluating different types of documents.
- The **selection of documents** – considered their authenticity, credibility, representativeness and significance.
- Regarding the **Sampling Technique** – The research corpus was built based on a non-predetermined number of documents, sampling continued until new insights were no longer obtained from collecting new data.

02

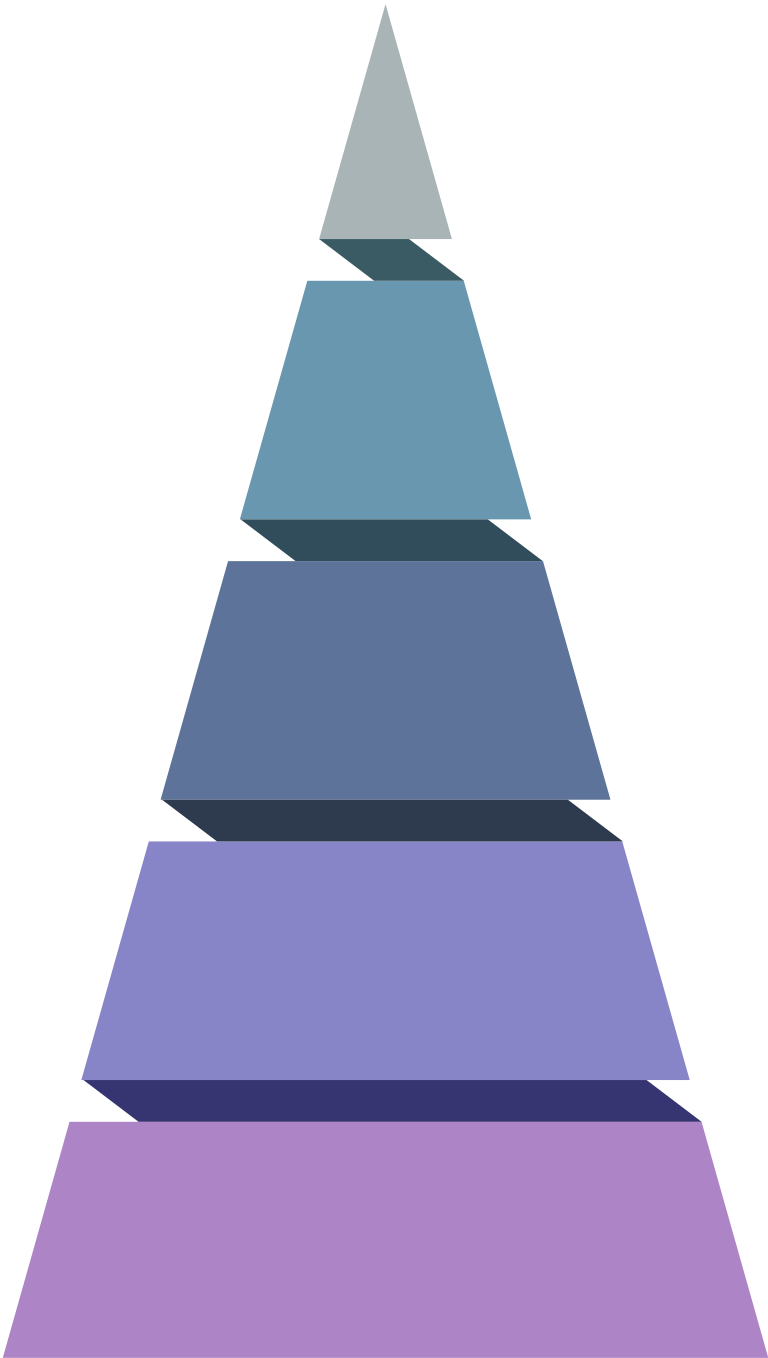
RESEARCH APPROACH

- **Qualitative** in that the study is positioned in a field very close to **Grounded Theory**.

01

PHILOSOPHICAL COSMOVISION

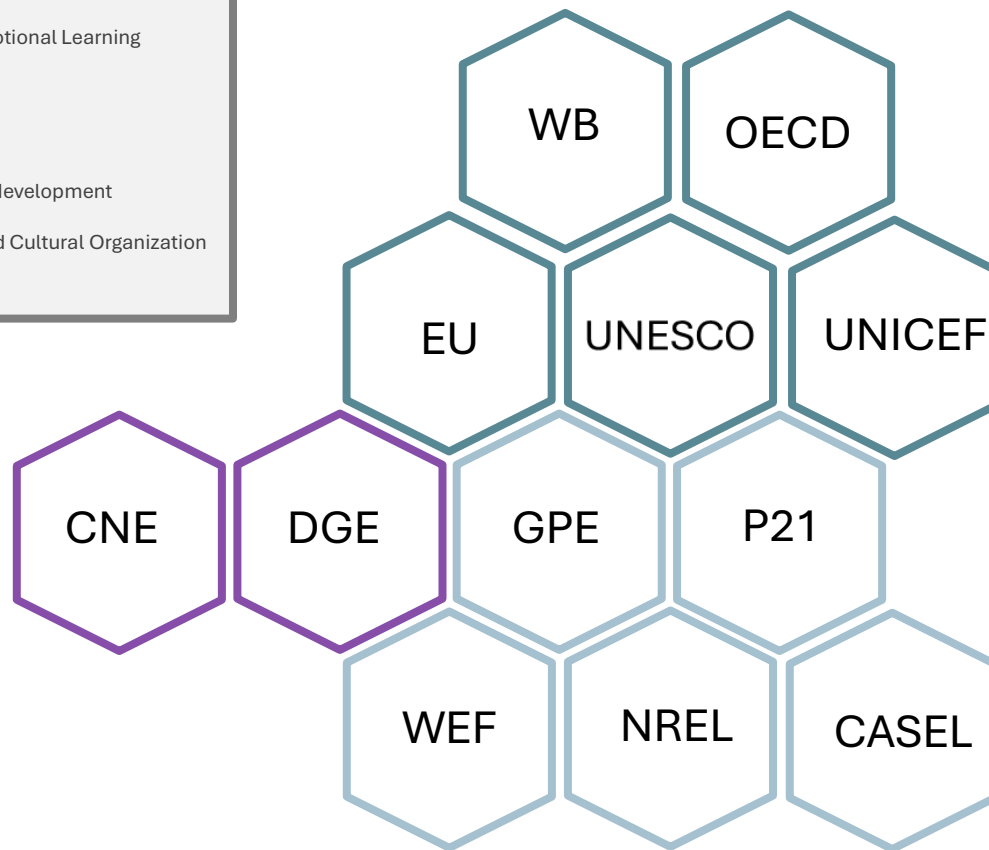
- **Social constructivist** – which seeks to understand the world and develop subjective meanings, based on multiple or varied perspectives.



RESEARCH CORPUS

- 30 documents from 12 organizations: 26 were developed on the initiative of international organizations and 4 by national organizations.

WB – World Bank
CASEL – Collaborative for Academic, Social, and Emotional Learning
CNE – Conselho Nacional da Educação
DGE – Direção Geral da Educação
EU – European Union
GPE – Global Partnership for Education
NREL – Northwest Regional Educational Lab
OECD – Organization for economic cooperation and development
P21 – The Partnership for 21st Century Learning
UNESCO – United Nations Educational, Scientific and Cultural Organization
UNICEF – United Nations Children's Fund
WEF – World Economic Forum



WB

- Education sector strategy (1999)
- Skills for jobs in the 21st century (2015)

EU

- Competências chave para a Aprendizagem ao Longo da Vida – Quadro de Referência Europeu (2006)
- Rethinking Education: Investing in skills for better socioeconomic outcomes (2012)
- Assessment of Transversal Skills 2020 (2015-2018)
- Recomendação de (2018)
- Digcomp 2.1. (20017) e Digcomp 2.2. (2022)

CNE

- Saberes Básicos de todos os cidadãos no séc. XX (2004)
- Relatório Final do Debate Nacional sobre Educação (2007)
- Que Currículo para o séc. XXI? (2011)

DGE

- Perfil dos Alunos à Saída da Escolaridade Obrigatória (2017)

WEF

- World Economic Forum (2016)
- Defining Defining Education 4.0: A Taxonomy for the Future of Learning (2023)

NREL

- Survival Skills (1996)

OECD

- 21st Century Skills and competences for New Millennium learners in OECD countries (2009)
- The Education and Skills 2030 (2015)
- Skills for the digital world (2016)
- Big Five Domains (2018)
- Conceptual Framework for the OECD Study on Social and Emotional Skills (2018)

UNESCO

- Global Monitoring Report - 2012 EFA Global Monitoring Report “Pathway to Skills”
- Unleashing the potential: transforming technical and vocational education and training (2015)
- Transversal Competencies (2016)
- Rethinking learning: a review of social and emotional learning for education Systems (2020)
- K-12 AI curricula: a mapping of government-endorsed AI curricula (2022)
- Human rights education: key success factors de (2023)
- Addressing hate speech through education (2023)

UNICEF

- MENA Regional Office - Life Skills and Citizenship Education Initiative – Middle East and North Africa (2015)

P21

- Framework for 21st Century Learning (2009 com adaptação 2019).

GPE

- Charter of the Global Partnership For Education, (2023).

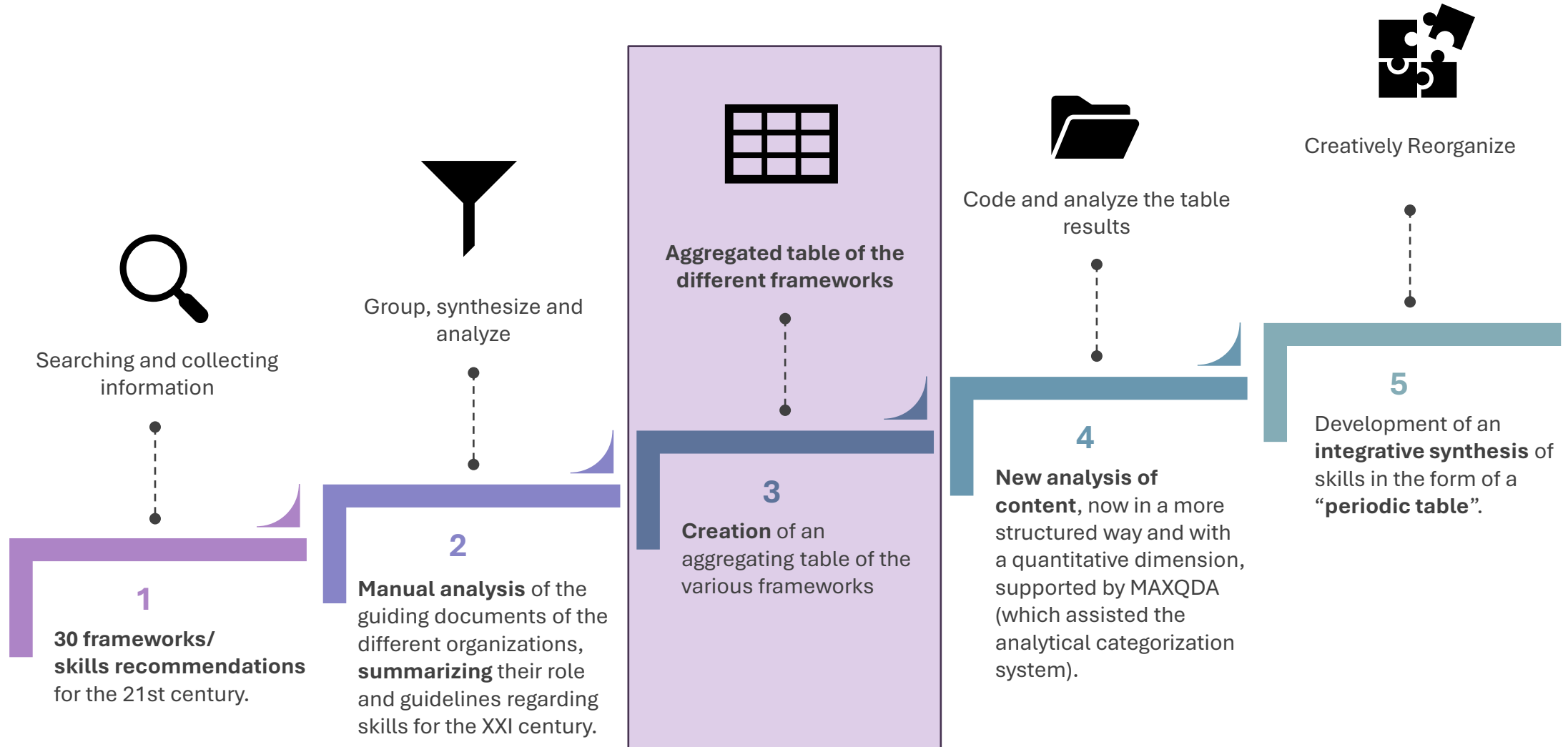
CASEL

- CASEL Framework on Social and Emotional Learning Collaborative for (2017)

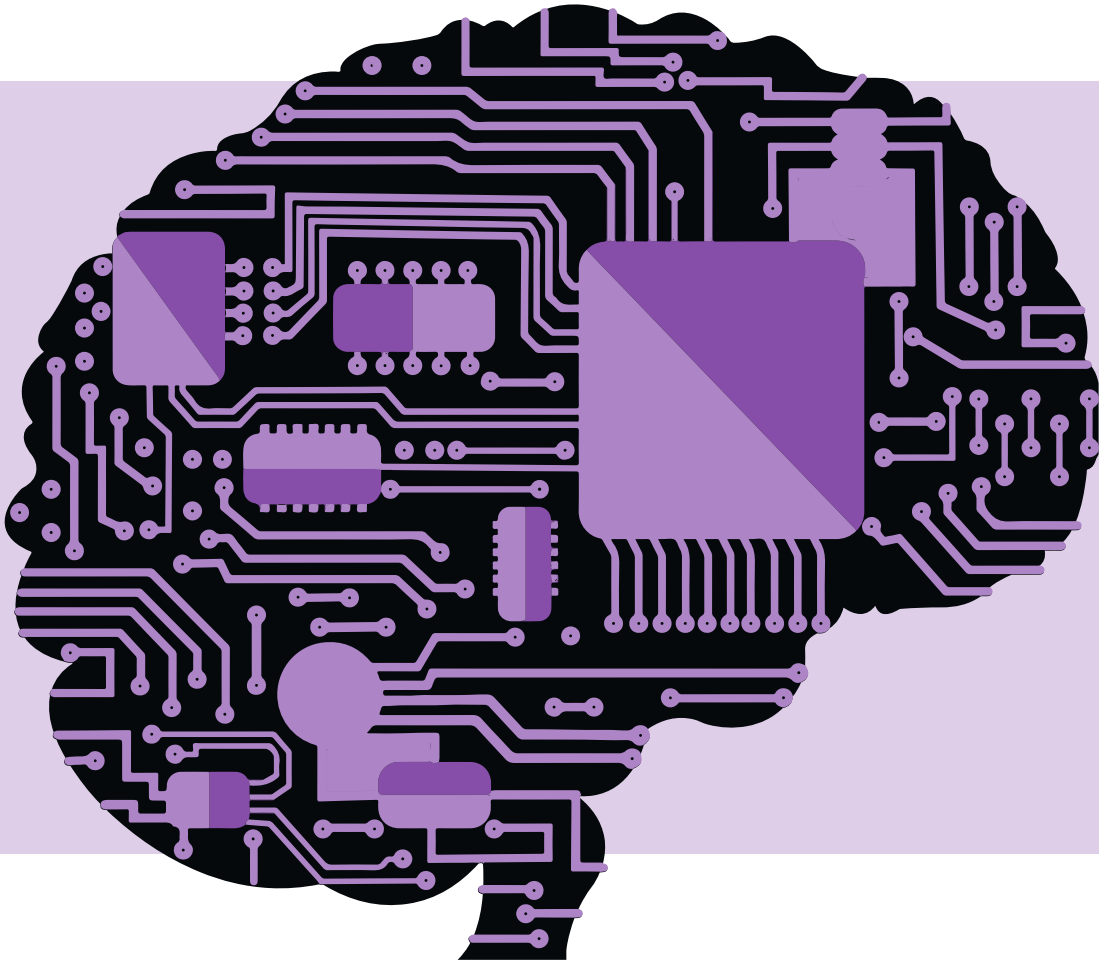
KEY:

-  National organizations
-  Public international organizations
-  Private international organizations

THE PROCESS



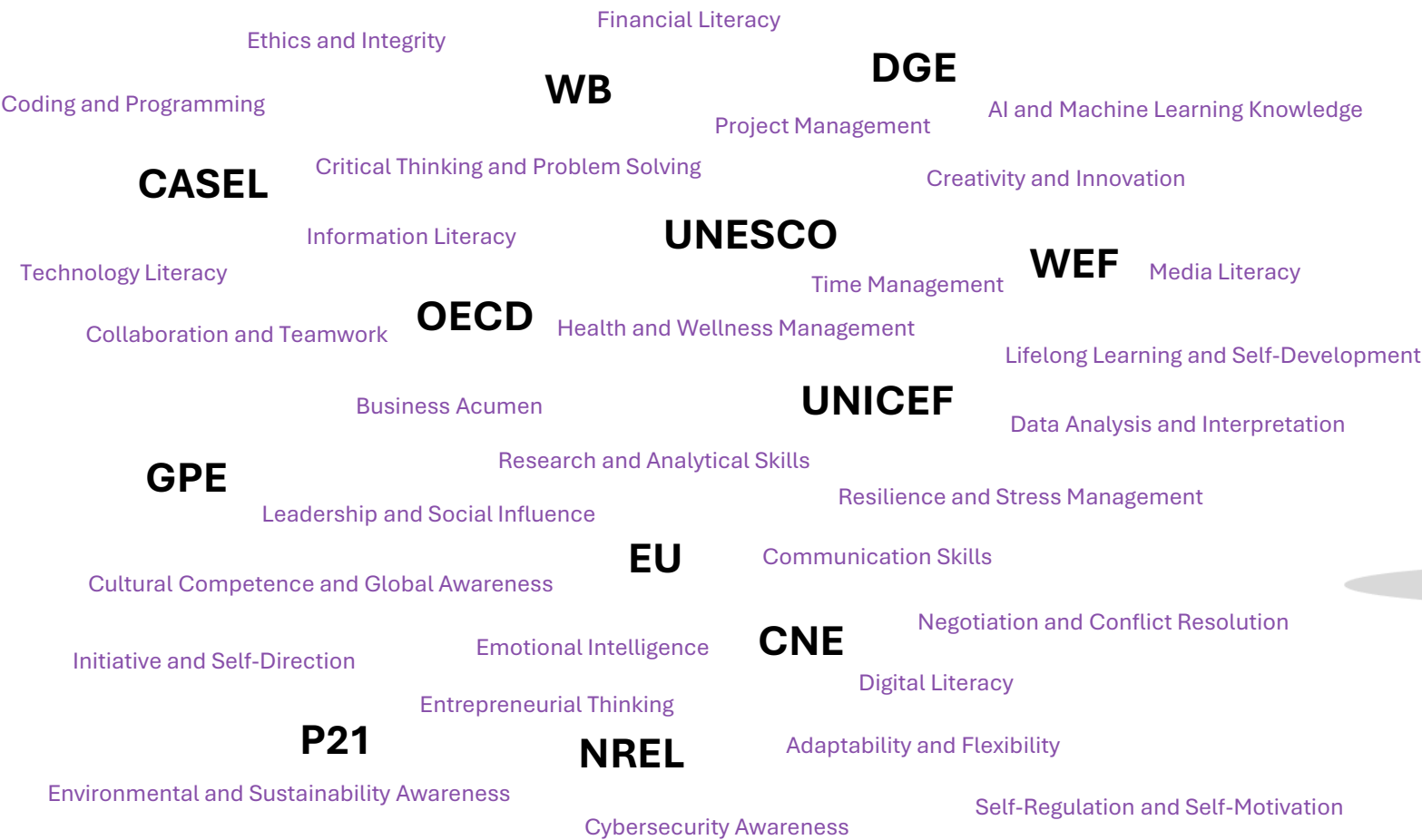
RESULTS AND DISCUSSION



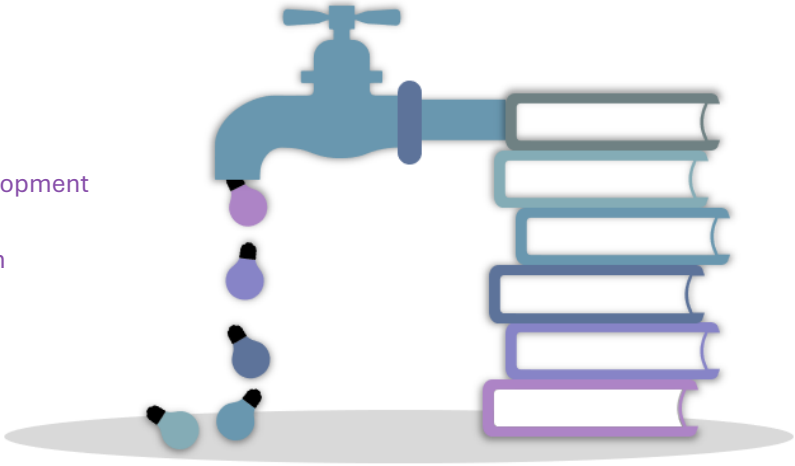
1) SKILLS SURVEY

**2) ANALYSIS AND SYSTEMATIZATION OF SKILLS FOR THE
21st CENTURY**

SKILLS/COMPETENCIES SURVEY



Based on the 30 skills/ competencies frameworks/recommendations for the 21st century from the 12 organizations



THERE WAS NO CONSENSUS IN TERMS OF CATEGORIZATION

EMERGENCE OF THE IDEA OF (RE)ORGANIZATION



1- DIVERGENCE

There is a great divergence in terms of which skills belong to each of the categorizations.



2- GROUPING

The need arose to create a table that would aggregate them according to the similarities found in the frameworks studied.



BUT HOW??????



3- PARALLELISM

An intriguing parallelism was noted between the skills and the elements of the periodic table.



4- IDEA OF PERIODIC TABLE

Just as chemical elements make up the essence of matter, acting as fundamental building blocks, human skills form the essential basis for personal and collective development.



5- MATERIALIZATION OF THE IDEA

Imagine hydrogen, the simplest and most abundant element in the universe, equated with ethics, whose central contribution to the humanization process is based on the values that guide our conduct?





PERIODIC TABLE BRIEF CONTEXTUALIZATION

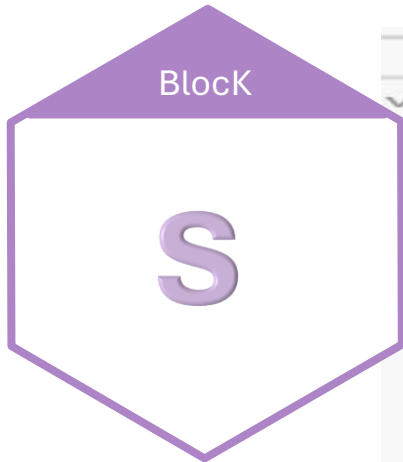
s Block												p Block																	
ALKALINE METALS	ALKALINE-EARTH METALS	d Block										BORO GROUP	CARBON GROUP	NITROGEN GROUP	OXYGEN GROUP	HALOGENS	NOBLE GASES												
1 H												5 B	6 C	7 N	8 O	9 F	10 Ne												
3 Li	4 Be											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar												
11 Na	12 Mg											31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr												
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	E 51-71	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Au	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn												
87 Fr	88 Ra	E 89-103	104 Rf	105 Db	106 Sg	107 Bh	108 Hs	109 Mt	110 Ds	111 Re	112 Cn	113 Nh	114 Fl	115 Mc	116 Lv	117 Ts	118 Og												

f Block		INTERNAL TRANSITIONAL ELEMENTS															
		57 La	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu	LANTHANIDES
		89 Lr	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr	ACTINIDES

“Learning to know and explore”

BLOCKS

(Fundamental skills for structuring conduct and awakening intellectual curiosity)

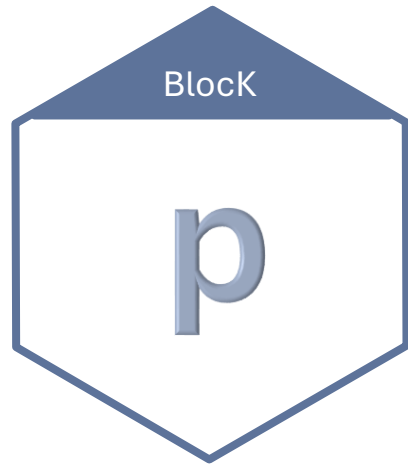


- Base skills**
- Moral North
 - Cognitive abilities

	1_BMI	2_OCDE	3_UNESCO	4_UNICEF	5_UE	6_CNE	7_DGE	8_GPE	9_WEF	10_CASEL	11_P21	12_NREL
Blocks												
Basic skills	1	1	1	1	1	1	1	1	1		1	1
Moral North												
Ethical competencies		1	4	1	1	1	1			1		
Ontology		4	3			2		1	1	1		1
Purpose		1	1	2	1	1	1		1	1		1
cognitive skills	1	1	1	1	1	1	1	1	1	1	1	1
Interdisciplinary thinking		1										
Planning		2		1	1					1		1
troubleshooting	1	2	3	2	2		1	1	1		1	
curiosity		3		2					2			
creative thinking	1	2	5	3	1	2	1	2	3		2	
critical thinking	1	2	4	1		2	1	1	1		1	
Learning to learn	1		1	1	1	1		1	1			1
Exploration	1	1	2				1					
Decision-making			1	2				1				

- The organizations that give them the greatest relevance: UNESCO and the OECD.
- Most mentioned: those associated with creative thinking, critical thinking and problem-solving skills.
- Less mentioned: exploration capacity, as well as decision-making.
- Curiosity: the ability for interdisciplinary thinking is only mentioned by one organization (OECD).

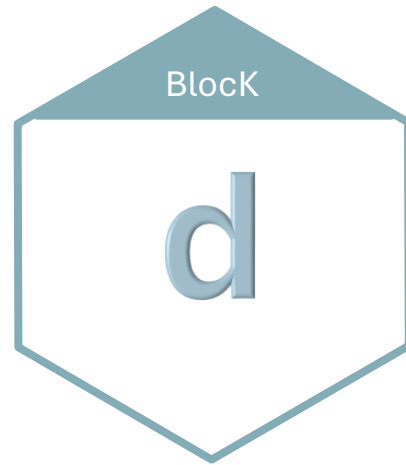
“Learning to do”



Fundamental literacies

- Literacy and numeracy
- Digital and technological literacy
- Media literacy
- Scientific Literacy
- Financial literacy
- Survival skills

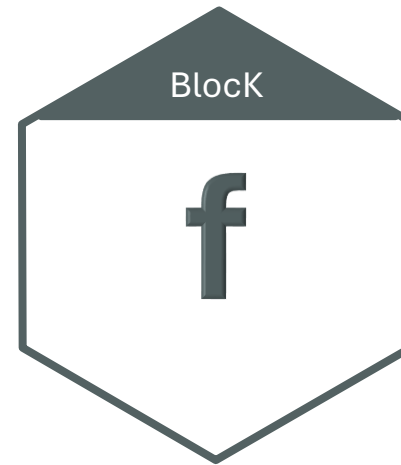
“Learning to Live Together”



Socio-emotional skills

- Communication and collaboration skills are the most mentioned – appearing in all frameworks – followed by adaptability.

" Learning to be”

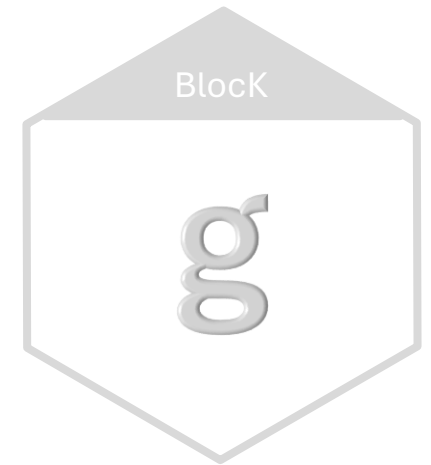


Life skills

- Citizenship
- Employability

- Citizenship concerns are more frequent in organizations' discourses compared to those associated with employability.

BlocK



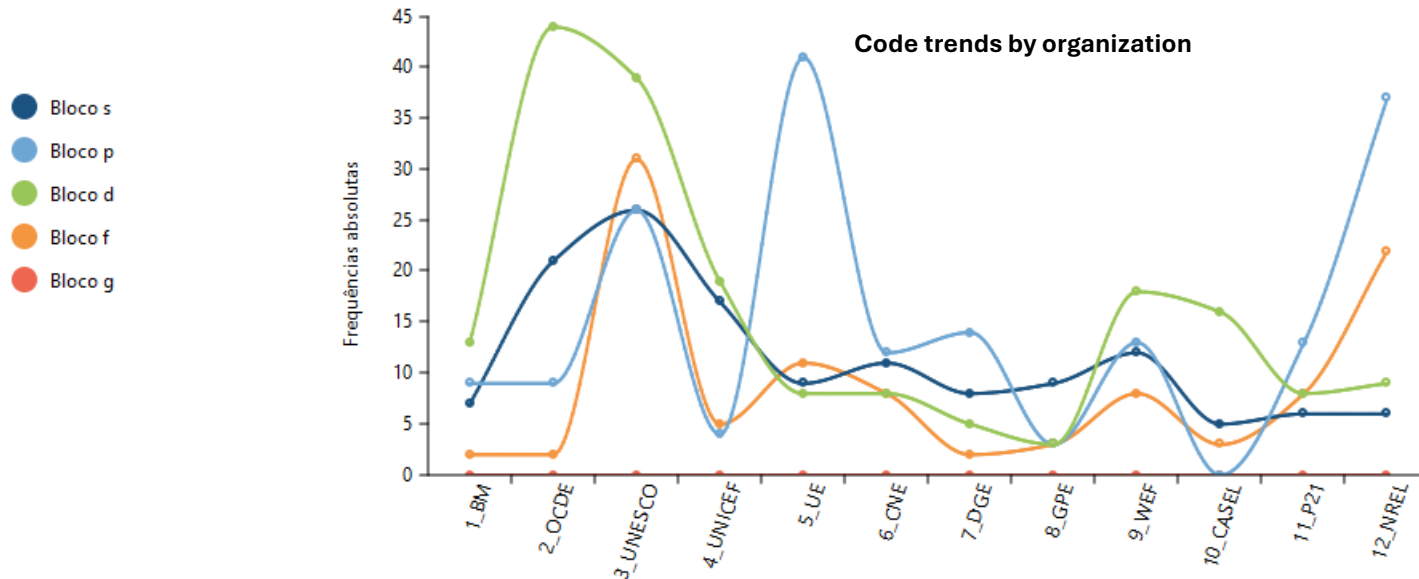
Other skills

Open so that future skills can be systematized according to their nature.

- It is curious that some of the world's organizations with the greatest economic influence do not highlight the importance of acquiring relevant knowledge in the economic-financial domain.

TRENDS IN ORGANIZATIONS

	1_BM	2_OCDE	3_UNESCO	4_UNICEF	5_UE	6_CNE	7_DGE	8_GPE	9_WEF	10_CASEL	11_P21	12_NREL
> Bloco s	7	21	26	17	9	11	8	9	12	5	6	6
> Bloco p	9	9	26	4	41	12	14	3	13		13	37
> Bloco d	13	44	39	19	8	8	5	3	18	16	8	9
> Bloco f	2	2	31	5	11	8	2	3	8	3	8	22
> Bloco g												



s Block– Base Skills

GPE is the organization that mainly refers to base skills.

p Block– Fundamental literacies

In the EU, CNE, DGE, P21 and NREL, skills associated with fundamental literacies stand out.

d Block– Socio-emotional skills

The WB, OECD, UNESCO, UNICEF, WEF, and CASEL prioritize socio-emotional skills in their speeches.

f Block– Skills for citizenship and employability

Skills for citizenship and employability are the least highlighted by organizations, with UNESCO and NREL being the ones that highlight them most.

UNESCO is the organization that encompasses the broadest scope of skills for the 21st century. This is likely due to its holistic focus on human development, the promotion of quality education and the pursuit of peace and sustainability.

Tabela Periódica das Competências

s Block

p Block

Base skills

1 E Ética Nonmetal	
3 On Ontologia Metal Alcalino	4 El Exploração Alcaline Earth Metal
11 P Propósito Metal Alcalino	12 A Aprender a ap. Alcaline Earth Metal
19 Pc Pens. crítico Alcaline Earth Metal	20 Pc Pens. crítico Alcaline Earth Metal
37 C Criatividade Alcaline Earth Metal	38 C Criatividade Alcaline Earth Metal
55 Cu Curiosidade Alcaline Earth Metal	56 Cu Curiosidade Alcaline Earth Metal
87 Pl Planeamento Alcaline Earth Metal	88 Pl Planeamento Alcaline Earth Metal

Número atómico
Símbolo
Nome
Índice do Grupo
Químico

d Block



Socio-emotional skills

Fundamental literacies

					2 Or orientação Noble Gas
5 Le Leitura Metalloid	6 Uf Utiliz. Ferram. Nonmetal	7 Cm Criação Med. Nonmetal	8 Sc Princ. científ. Nonmetal	9 O Orçamento Halogen	10 Ce Com. emergê. Noble Gas
13 Es Escrita Post-Transition Metal	14 Cr Crt. Conteúdos Metalloid	15 Am Análise Med. Nonmetal	16 T Tecnologia Nonmetal	17 Iv Investimento Halogen	18 Ab Abrigo Noble Gas
31 In Interpretação Post-Transition Metal	32 Ge Gestão dados Metalloid	33 Dm Difusão Med. Metalloid	34 Eg Engenharia Nonmetal	35 Po Poupança Halogen	36 Gr Ger. Recursos Noble Gas
49 Ar Argumentação Post-Transition Metal	50 Pg Programação Post-Transition Metal	51 M Matemática Metalloid	52 Se Seguros Halogen	53 Sa Saúde Noble Gas	54 Sa Saúde Noble Gas
81 Ex Expressão Intp. Post-Transition Metal	82 Al Autoria/Licenç Post-Transition Metal	83 La Lógica analít. Metalloid	84 Dc Dívida crédito Halogen	85 Dp defesa pessoal Noble Gas	86 Dp defesa pessoal Noble Gas
113 Cn R.Cálculo num. Post-Transition Metal	114 Sd Segurança dig. Post-Transition Metal	115 Df Decis. Financ. Halogen	116 Df Decis. Financ. Halogen	117 Df Decis. Financ. Halogen	118 Df Decis. Financ. Halogen

21 Cl Colaboração Transition Metal	22 So Sociabilidade Transition Metal	23 Em Empatia Transition Metal	24 Cf Confiança Transition Metal	25 Au Autonomia Transition Metal	26 H Humildade Transition Metal	27 Co Comunicação Transition Metal	28 Ac Autocontrolo Transition Metal	29 Ad Adaptabilidade Transition Metal	30 Re Respeito Transition Metal	31 In Interpretação Post-Transition Metal	32 Ge Gestão dados Metalloid	33 Dm Difusão Med. Metalloid	34 Eg Engenharia Nonmetal	35 Po Poupança Halogen	36 Gr Ger. Recursos Noble Gas
39 I Iniciativa Transition Metal	40 Pv Preservação Transition Metal	41 Rl Resiliência Transition Metal	42 St Res. stress Transition Metal	43 Rp Responsabilid Transition Metal	44 Ie Int. Emocional Transition Metal	45 Ae Autoeficácia Transition Metal	46 Gc Gest. conflitos Transition Metal	47 Li Liderança Transition Metal	48 N Negociação Transition Metal	49 Ar Argumentação Post-Transition Metal	50 Pg Programação Post-Transition Metal	51 M Matemática Metalloid	52 Se Seguros Halogen	53 Sa Saúde Noble Gas	54 Sa Saúde Noble Gas
72 Mo Motivação Transition Metal	73 Av Assertividade Transition Metal	74 Cp Comprometim. Transition Metal	75 Cp Comprometim. Transition Metal	76 Cp Comprometim. Transition Metal	77 Cp Comprometim. Transition Metal	78 Cp Comprometim. Transition Metal	79 Cp Comprometim. Transition Metal	80 Cp Comprometim. Transition Metal	81 Cp Comprometim. Transition Metal	82 Cp Comprometim. Transition Metal	83 Cp Comprometim. Transition Metal	84 Cp Comprometim. Transition Metal	85 Cp Comprometim. Transition Metal	86 Cp Comprometim. Transition Metal	87 Cp Comprometim. Transition Metal
104 Rs Resp. Social Lanthanide	105 Cg Conc. Global Lanthanide	106 Ci (Inter)Cultural Lanthanide	107 Sr Regras sociais Lanthanide	108 Cd Cuidar dos out. Lanthanide	109 Ca Cid. Ativa Lanthanide	110 S Sustentabilidd Lanthanide	111 Pd Part. Democrt. Lanthanide	112 D Direitos Lanthanide	113 At Ativismo Lanthanide	114 Sd Segurança dig. Post-Transition Metal	115 Df Decis. Financ. Halogen	116 Df Decis. Financ. Halogen	117 Df Decis. Financ. Halogen	118 Df Decis. Financ. Halogen	119 Df Decis. Financ. Halogen
89 Pr Produtividade Actinide	90 Ep Empreendedor. Actinide	91 Og Organização Actinide	92 Os Orient. Serviço Actinide	93 Ri Assu. Risco Actinide	94 Ri Assu. Risco Actinide	95 Ri Assu. Risco Actinide	96 Ri Assu. Risco Actinide	97 Ri Assu. Risco Actinide	98 Ri Assu. Risco Actinide	99 Ri Assu. Risco Actinide	100 Ri Assu. Risco Actinide	101 Ri Assu. Risco Actinide	102 Ri Assu. Risco Actinide	103 Ri Assu. Risco Actinide	104 Ri Assu. Risco Actinide

Life skills
f Block



CONCLUSIONS

- Mapping education futures through skills analysis is a **complex and dynamic task**, requiring an approach that is both flexible and deeply rooted in a clear understanding of emerging needs.
- It is noted that the position of each organization in relation to the required skills framework varies depending on the ways in which it views education and its purposes.
- The periodic table of skills sought to offer a reconciling structure for organizations' visions, with a view to facilitating the integration of emerging skills into curricular development.



Base skills



Fundamental skills



Socio-emotional skills



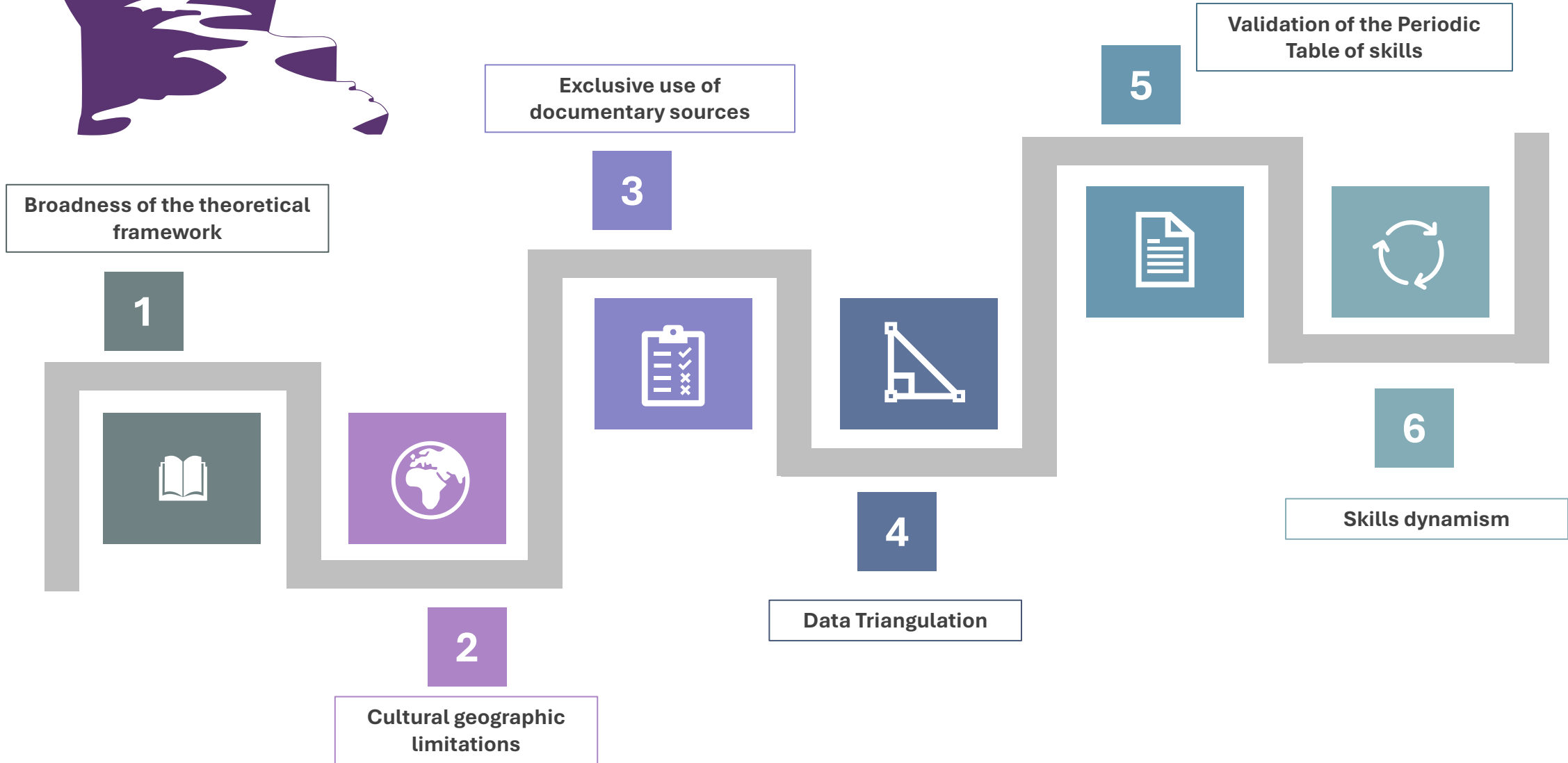
Life skills



Open future skills

- Having said this, the **crucial role of teachers** in implementing a curriculum adapted to the demands of the 21st century stands out, as they act in mediating this process, managing not only the formal curriculum defined at national level, but also meeting the specific needs of their students.
- This is where **pedagogical supervision** comes in – a teacher who decides the curriculum must also be a teacher undergoing constant professional development.

STUDY LIMITATIONS





THANK YOU

for your attention

