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# Critical thinking, creativity, and agency for the development of regenerative cultures

Margarida Romero<sup>1,2</sup>, Guillaume Isaac<sup>1</sup>, Sylvie Barma<sup>2</sup>, Marc-André Girard<sup>3</sup>, Laurent Heiser<sup>1</sup>

<sup>1</sup> Université Côte d'Azur, France

<sup>2</sup> Université Laval, Canada

<sup>3</sup> Université de Sherbrooke, Canada

## Abstract

This research paper emphasizes the significance of nurturing critical thinking and agency among citizens to drive the transformation of cultures of resource exploitation towards more regenerative practices in education and business. Drawing on cultural historical activity theory, the paper argues that promoting critical thinking enables individuals to challenge existing norms and envision sustainable alternatives, while agency empowers individuals to actively participate in shaping their social and cultural environments. The paper underscores the need for educational and business environments that foster critical thinking and agency and suggests strategies such as collaborative and participatory learning, diverse perspectives in the curriculum, real-world problem-solving, and sustainability education. By integrating cultural historical activity theory into educational and business practices, it is posited that individuals can develop the skills and agency necessary to actively engage in transforming cultures of (human) resource exploitation towards more regenerative practices, benefiting not only the present generation but also future generations and the overall sustainability of our planet.

*Keywords:* agency, critical thinking, creativity, cultural historical activity theory, talent management, regenerative cultures

## Introduction

In recent years, there has been a growing recognition of the urgent need to move from cultures of resource exploitation and unsustainable practices to more regenerative approaches. It must be understood as a radical change requiring a fundamental change in how not only humans but also society interact with and engage (human) resources, both in educational settings and in the business world. In this research paper, we argue that agency stems from critical and politicized thinking among citizens (Wallenhorst, 2022). Hence, agency is understood as a crucial force to obtain this profound and radical change from the system that exhausts, more than ever, our natural resources. Our paper will draw upon the lens of cultural historical activity theory (CHAT) to underscore that CHAT can provide a theoretical framework around the idea of a collective responsibility for the transformation of our lifestyle. . Cultures of exploitation of (human) resources refer to societal or organizational systems that prioritize the extraction, utilization, and exploitation of resources without considering long-term sustainability, ecological impact, or social consequences. These cultures may prioritize short-term gains, profit-oriented approaches, and unsustainable practices that deplete resources, harm the environment, and exploit human labor; sustainability and sustainable development may be understood to include human capacity for agency aiming at both societal and ecological change (Agbedahin & Lotz-Sisitka, 2019). On the other hand, *regenerative cultures* (Collado-Ruano & Segovia-Sarmiento, 2022) emphasize a shift towards sustainable, restorative, and holistic approaches that aim to restore

and revitalize ecosystems, communities, and human well-being. Regenerative culture is “healthy, resilient, and adaptable, caring for the planet and all life in the awareness that this is the most effective way to create a thriving future for all of humanity” (Contreras et al., 2019, p. 23). Regenerative cultures prioritize a regenerative mindset that fosters resilience, equity, and sustainability, and seeks to replenish, renew, and restore resources, both natural and human, for future generations. As such, cultures of exploitation and regenerative cultures may be considered exemplars of transactional intelligence (taking action in one’s own best interest) and transformational intelligence, whereby individuals are pushed to act in the interest of the greatest number (Sternberg, 2021) so that “earth does not become unfit for human life in society” (Wallenhorst, 2022, p. 269).

In this study, we start introducing five of the key 21st century skills based on the #5c21 framework, including critical thinking, creativity, problem solving, collaboration, and computational thinking (Romero, 2017). We discuss the OECD (2014) competency framework, considering interpersonal skills such as building relationships, planning for the future (strategic skills), and achieving results (delivery-related skills). Thereafter, we analyze how CHAT can provide insights into understanding the role of critical thinking and agency in transforming cultures of resource exploitation, particularly in educational and business contexts.

### **21st century skills for regenerative cultures**

In the context of regenerative cultures, it is crucial to adopt a time perspective approach (Boyd, & Zimbardo, 2012) that considers the past, present, and future when developing educational and business activities. Building on the #5C21 competencies (Romero, 2017), which encompass critical thinking, creativity, problem solving, collaboration, and computational thinking, we contend that citizens also need to incorporate a forward-looking orientation that takes into account the long-term consequences of their actions on the environment and society, which means being aware that we, as humans, have become “a geological force” (Wallenhorst, 2022, p. 269). At the economic level, Weidema (2018) and Nibourel (2011) propose to consider the *social footprint* for evaluating the social impacts of a product or service throughout its entire life cycle, including its supply chain and consumer use. The social footprint is important for a more regenerative culture because it provides a framework for assessing the social impacts of products and services in a systematic and comprehensive way. By understanding the positive and negative social impacts of a product or service throughout its life cycle, companies can identify areas for improvement and work towards more socially sustainable practices. This can lead to a more regenerative culture where economic, environmental, and social sustainability are all considered and balanced for long-term success.

Moreover, the OECD (2014) competency framework emphasizes interpersonal skills for building relationships, strategic skills for planning for the future, and delivery-related skills for achieving results. This includes considering the impact of present actions on future generations and the need to plan and strategize for sustainable outcomes. Taking a time perspective approach allows individuals to reflect on historical patterns of resource exploitation, assess the current state of resource utilization, and plan for a more regenerative future by making informed decisions and taking responsible actions. Incorporating this time perspective approach into educational and business practices can help individuals develop a holistic understanding of regenerative cultures that consider the past, present, and future, and promote sustainable practices for the benefit of current and future generations. Indeed, the present generation always bears a responsibility towards future generations (Bertrand et al., 1997)

and this is why education contributes to the invention of a new vision for the planet and the way humans interact with their environment, whether it is social or natural.

**Figure 1.**

#5c21 competencies and the OECD skills considering the time perspective regulation

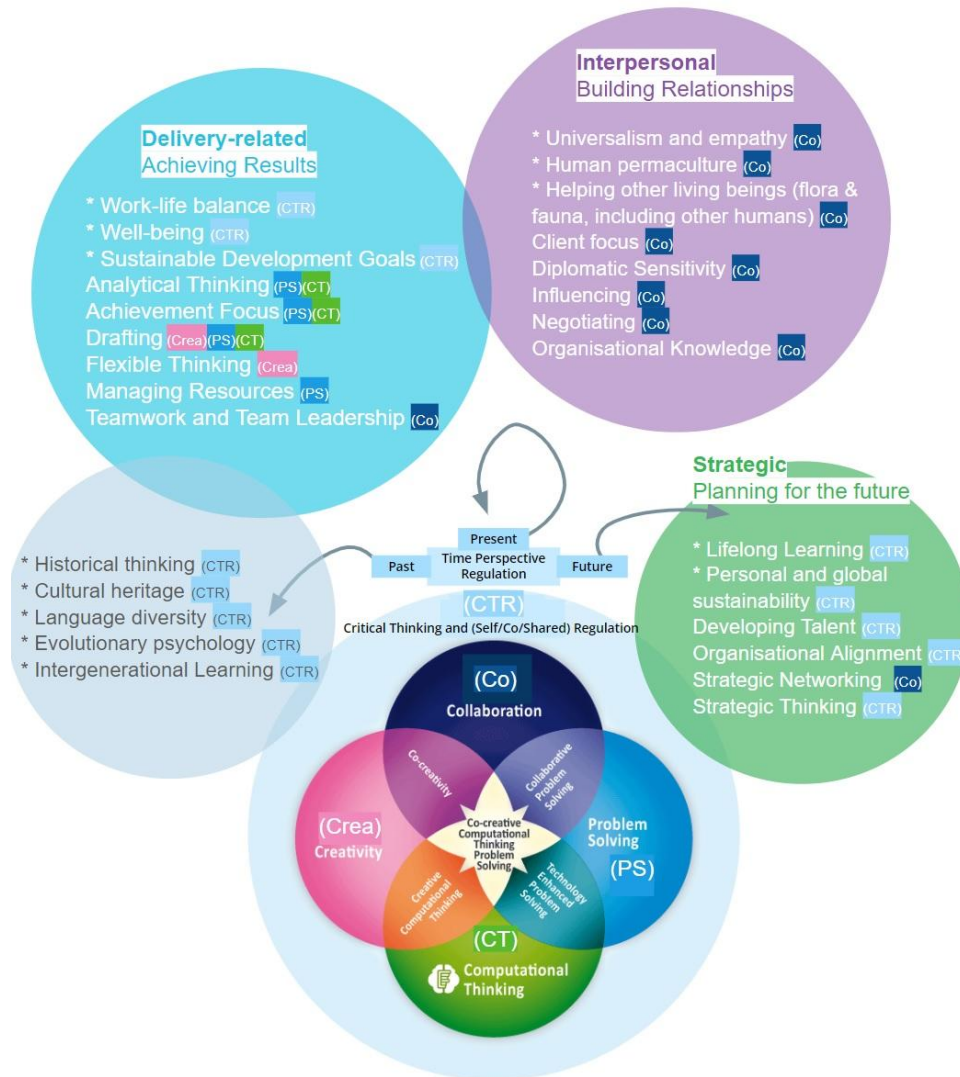


Figure 1 articulates the OECD (2014) skills in relation to the #5c21 competencies. The skills marked as \* have been added to the original OECD framework to consider the skills considered in the sustainable development goals (SGDs) and *regenerative culture* communities (Alm et al., 2022; Collado-Ruano & Segovia-Sarmiento, 2022; Rieckmann, 2017).

### Critical Thinking and Agency

Critical thinking, as a cognitive process that involves analyzing, evaluating, and synthesizing information, plays a central role in agency. It enables individuals to critically examine the underlying assumptions, values, and consequences of current practices and to develop alternative perspectives and solutions. According to King and Kitchener (2004), postformal development in adults includes three main phases (pre-reflective, quasi-reflective, reflective), and it is only in the last phase that

adults can become aware of all the aspects underlying the complexity of an environmental issue, for example. The development of critical thinking is not thoughtless criticism of everything and anything, but a reflective and reasonable evaluation of what to believe or do. Lipman (1988) characterizes it as a responsible way of thinking that facilitates good judgment because it is criterion-referenced, self-correcting, and context-sensitive. Critical thinking has various components. Indeed, the acquisition of knowledge, both about the issue under study and about the limits of knowledge, is necessary. Subsequently, a person must become aware of the aspects, both affective and cognitive, that guide his or her decision (criteria, values, beliefs, etc.). Several skills are involved in the implementation of critical thinking: evaluation of information, reasoning, self-evaluation, taking the context into account, and developing criteria. In addition, critical thinking skills must be used across the board and become habits of conduct, a way of being. Critical thinking should not only be used to value our own points of view, but also to understand those of others. Through critical thinking, individuals can challenge dominant discourses and power structures that perpetuate unsustainable resource exploitation, and actively contribute to the construction of more regenerative cultures. This awareness is the foundation of agency : it calls for action, a regenerative action.

CHAT emphasizes the importance of human agency, defined as individuals' ability to actively participate and shape their social and cultural environments through their actions and intentions. It breaks the cycle of the perception of humans that undergo the environment so they can empower themselves and shape it. It is a mindset of emancipation where we understand the environment as a human construct and, therefore, can deconstruct it to be regenerated to meet our needs and collective aspirations. In the context of changing cultures of resource exploitation, agency is crucial for individuals to engage critically with existing practices and norms, and to envision and enact more sustainable and regenerative ways of interacting with resources. For Engreström and Sannino (2020), agency “refers to the subject’s willed quest for transformation. It transpires in a problematic, polymotivated situation in which the subject evaluates and interprets the circumstances, makes decisions according to the interpretations, and acts upon these decisions. In sum, our concept of *transformative agency* contains three necessary elements: (1) a situation of contradictory motives, (2) the construction of an auxiliary stimulus-means i.e., the resources mobilized to address the problem situation (e.g., material or psychological objects); and (3) practical action to transform the situation with the help of the auxiliary stimulus-means. "The three elements typically come together in successive steps, forming longitudinal mediational chains” (p. 90). In the field of business, transformative agency can involve business leaders and stakeholders evaluating existing business models that may prioritize short-term profits over long-term sustainability. Under the perspective of transformative agency, business leaders can construct auxiliary stimulus-means, such as developing circular economy strategies, promoting responsible supply chain management, and implementing environmentally-friendly production practices. Leaders can then take practical actions, such as investing in renewable energy, adopting sustainable packaging, and promoting fair labor practices, to transform their business practices and foster a regenerative culture that values sustainability, social responsibility, and ethical resource use. Under the perspective of transformative agency, educational leaders can also take practical actions. For instance, they can implement digital citizenship models for staff and students and teach the latter how to use digital tools as a powerful lever to solve creatively complex problems inherited from past generations. They can install lunch composting stations in partnership with municipalities, create outdoor classrooms as a means to raise awareness about environmental education through curricula, and manage bee hives in urban settings to collect sustainable honey. They can use artificial intelligence (AI) to predict students' threats to success

thanks to data analysis and correlation between students' attendance, tasks at hand, and evaluation's up to date results.

In both educational and business contexts, the concept of transformative agency can empower individuals to take purposeful actions towards regenerative practices, thereby contributing to the development of cultures that prioritize sustainability, equity, and resilience.

Transformative agency can be applied to entrepreneurship education, as highlighted in the study by Engeström and Käyhkö (2021). This can involve educators critically evaluating current entrepreneurship education practices in both school and out-of-school contexts, identifying contradictions or problematic motives, such as a narrow focus on profit-driven entrepreneurship without considering sustainability or social impact. With transformative agency, educators can construct auxiliary stimulus-means, such as integrating sustainability-oriented and socially responsible entrepreneurship concepts into the curriculum, promoting critical reflection on ethical considerations, and fostering entrepreneurial mindsets that prioritize regenerative practices. They can then take practical actions, such as implementing experiential learning activities, engaging with local community initiatives, and facilitating partnerships with sustainable enterprises, to transform entrepreneurship education practices and foster a regenerative culture that nurtures students' critical thinking, agency, and responsible entrepreneurship towards more sustainable and socially responsible resource use.

### **Promoting Critical Thinking and Agency in Education**

Education plays a vital role in fostering critical thinking and agency among citizens, as it provides opportunities for individuals to develop the cognitive and social skills necessary for engaging critically with complex issues, including resource exploitation and the unacceptable risks (Jonas, 2013) of depleting Earth's natural resources.

In 2006, Barma and Guilbert, suggested that goals in science education should be directed towards the development of the social agency of future citizens, which we believe requires the development of critical thinking in science. A more democratic society implies an increase in transparency and trust, more public participation in the major societal debates. Thus, it seems particularly important to develop a critical and democratic expertise for several reasons: to reduce the distance between the experts and the population; to promote the development of social action; to encourage participation in scientific-technical controversies; to make the population aware of the theoretical concepts and research processes underlying the production of scientific knowledge; but also, and above all, to take into account that citizens also have their own form of knowledge, expectations, needs, interests, and an understanding of the constraints of their context that is different from that of scientists. Gone are the days when education, in terms of the public understanding of science, was a simple vulgarization of 'real' scientific knowledge, especially in this century, profoundly marked by AI and the immediate portable access to information. Scientific methods imply the setting up of work teams, the mobilization of human and economic resources, and human and social capital, as well as the management of all this - often in the midst of many conflicts. It seems that, more than ever, there's a blatant need for focusing on developing critical thinking and agency with our students, maybe self-fulfilling Montaigne's (1533-1592) epigraph: "Rather a well-made than a well-filled head".

This epistemological posture leads us to a different educational context and takes us to the relevance of CHAT which suggests that educators can create learning environments that facilitate critical thinking. and agency by encouraging students to engage in collaborative and participatory learning

activities, such as group discussions, problem-solving tasks, and project-based learning, that foster critical thinking and agency through social interaction and collective meaning-making (Engeström, 2001). They can also incorporate diverse perspectives and voices in the curriculum, including indigenous knowledge and local cultural practices, to promote critical awareness of different ways of interacting with resources and to challenge dominant discourses that perpetuate unsustainable exploitation (Miettinen, 2000). Moreover, educators may provide opportunities for students to engage in real-world problem-solving and action-oriented projects, such as community-based initiatives or sustainable business ventures, that allow them to apply critical thinking skills in addressing real-world resource exploitation challenges (Snyder & Snyder, 2008).

### **Promoting Critical Thinking and Agency in Business**

Businesses, as key players in resource exploitation, also have a significant role to play in promoting critical thinking and agency toward more regenerative cultures. CHAT suggests that businesses can foster critical thinking and agency among their employees and stakeholders by encouraging a culture of open inquiry and constructive dissent, where employees are encouraged to critically question existing practices, challenge assumptions, and generate innovative solutions for more sustainable resource exploitation (Nicolini, 2013). Employees can be engaged in cross-functional collaborations and participatory decision-making processes that allow for diverse perspectives and expertise to be considered, and that enable employees to actively contribute to shaping the organization's sustainability practices (Choi & Ruona, 2011). Business can also benefit from sustainability education and training programs in the workplace, which provide employees with the knowledge, skills, and tools necessary for critically examining and addressing the social, economic, and environmental impacts of resource exploitation (Kilbourne et al., 2013).

### **Discussion**

From a CHAT perspective, promoting critical thinking and agency among citizens is essential for the objective of changing cultures of resource exploitation towards more regenerative practices in education and business and reaching sustainable global citizenship (Granados-Sánchez, 2023). By fostering critical thinking, individuals are empowered to challenge existing norms, assumptions, and practices related to resource exploitation and envision more sustainable alternatives. Through agency, individuals can not only actively participate in shaping their social and cultural environments, including educational settings and business organizations, towards more regenerative cultures, but they are also trained to act upon their doubts, verify knowledge sources, and assess their very own subjectivity. It is imperative for educators and businesses to create environments that foster critical thinking and agency. In education, this can be achieved through collaborative and participatory learning activities, incorporating diverse perspectives into the curriculum, and providing opportunities for real-world problem-solving and action-oriented projects. In business, this can be accomplished by promoting a culture of open inquiry and constructive dissent, facilitating cross-functional collaborations, and incorporating sustainability education and training programs that may participate in changing the worldview and identity of learners (Mezirow, 1991) to promote transformative learning (Michel et al., 2020). In this sense, transformative competences involve (1) creating new value, (2) reconciling tensions and dilemmas, and (3) taking responsibility for one's actions (OECD, 2018). By integrating the insights from CHAT into educational and business practices, we can contribute to the development of citizens who possess the critical thinking skills and agency necessary to actively engage in transforming cultures of resource exploitation towards more regenerative

practices. This can ultimately lead to more sustainable and responsible approaches to resource management, benefiting not only the present generation but also future generations and the planet as a whole.

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