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Abstract

Rio Tinto, located in the state of Paraíba, in the Northeast of Brazil, was founded as a cotton mill company town in 1917; termination of industrial activity and the subsequent abandon of the industrial sites have provoked the destruction of references related to communitarian memory and identity. Facing the absence of appropriate public protection policies and community action, as the older generations disappear, the memories of this company town are fading away with them.

The present article aims at exploring how Heritage Education can be fruitfully used for promoting industrial heritage safeguard based upon the example of Rio Tinto. It seeks to underline the relevance of extending the potential of Heritage Education tools and methods to industrial heritage safeguard.

Resumen

Río Tinto, ubicada en el estado de Paraíba, en el noreste de Brasil, fue fundada como una ciudad industrial de fábricas de tejido de algodón en 1917. El fin de la actividad industrial y el posterior abandono de los sitios industriales han provocado la destrucción de referencias relacionadas con la memoria e identidad comunitarias. Frente a la ausencia de políticas adecuadas de protección pública y de acción comunitaria, los recuerdos de esta ciudad industrial se desvanecen conforme desaparecen las viejas generaciones.

El presente artículo tiene como objetivo indagar cómo la educación patrimonial puede ser provechosamente utilizado para promover la salvaguarda del patrimonio industrial, tomando como ejemplo el caso de Río Tinto. Se pretende enfatizar la pertinencia de extender el potencial de las herramientas y métodos de educación patrimonial para salvaguardar el patrimonio industrial.
Education and Industrial Heritage safeguard: the company town of Rio Tinto, Brazil

1. Introduction: the safeguard of industrial heritage

This article discusses how heritage education can play a significant role in the sustainability of cultural heritage, and in particular of industrial heritage. It advances the premise that industrial remains form an essential part of historical memory of present-day society and therefore need to be preserved; as Clark observed, landscape today is dominated by the remains of the last 200 years.¹

The heritage of industry includes tangible and intangible traces, more or less well preserved, of its operation and its integration into the landscape or in society. Concern with industrial heritage has grown in importance over the last decades; in different parts of the world, the upheavals of deindustrialization prompted the study, documenting, inventorying, listing and conservation of industrial heritage. The main strands of conservation policy – understanding, protection, and preservation – were sought since the origins of the commitment to industrial heritage.

Those initiatives were pursued on two fronts: on the one hand, emphasis was “placed on generating scholarship that helps illuminate the process of industrialization and its impact on society”²; on the other hand, much effort has been geared towards the preservation of industrial heritage, seeking to “encourager sa sauvegarde dans ses éléments les plus significatifs, sa réutilisation ou sa valorisation auprès du public des musées ou du tourisme de sites”³.

As Palmer and Neaverson point out, public perception is decisive to the acceptability of elements of past culture in the contemporary landscape, and therefore raising awareness and understanding, as well as engaging public opinion in recognizing the value of industries is vital to the sustainable preservation of industrial heritage⁴. Sustainability in cultural heritage is only possible if the community recognize a heritage value in the industrial remains. Hence, the International Committee for the Conservation of the Industrial Heritage (TICCIH) affirms that “Public interest and affection for the industrial heritage and appreciation of its values” are “the surest ways to conserve it”⁵.

¹ Clark (2005)
² Martin (2009)
³ Bergeron and Dorel-Ferre (1996), p. 5
⁴ Palmer and Neaverson (1998)
⁵ The Nizhny Tagil Charter (2003)
To address the challenge of promoting the recognition of heritage value and also a sense of responsibility for the safeguard of heritage assets, education is fundamental. As a privileged framework for awareness, enjoyment and respectful use of cultural heritage, education is key in ensuring the sustainability of industrial heritage safeguard. Branchesi supports that the role of education is irreplaceable and that “the issues concerning protection and conservation” cannot “be resolved without education, otherwise there is the risk of wasting time and financial resources”\(^6\).

Industrial heritage scholarship has also acknowledged the vital importance of education in safeguarding heritage. The TICCIH suggests the development of “Specific educational material about the industrial past and its heritage” for “students at primary and secondary level” in order to engage the public in an active preservation of the values of industrial heritage.\(^7\) Bergeron criticized the lack of formal “cultural education” aiming at familiarizing students with the notion of industrial heritage; he argued that a true commitment to industrial heritage protection policies can only be achieved if the State sponsors systematic educational initiatives, teaching and learning programs or pedagogical approaches, adding that all other protection measures are superficial in the absence of education\(^8\).

Nevertheless, despite this importance, most of the professional and scholarly literature on industrial heritage preservation has neglected education. The most important contributions heretofore have been made by the English Heritage. In 1995 the Commission published *Using Industrial Sites*, a guide for school teachers on industrial heritage. The guide aimed at providing information on Britain’s industrial past, introducing concepts related to the study of industrial heritage, presenting the different typologies of industrial sites and how they could be used as learning tools, and discussing the preservation of industrial heritage. Most importantly, it instructs teachers on how industrial heritage can be taught within the framework of the national school curriculum. Furthermore, the Commission also produces other resources for teachers, such as a the biannual *Heritage Learning* magazine, which has featured articles on British industrial and technological heritage, and several teaching guides on industrial sites in Britain. Those learning resources, however, are guidelines for lesson plans and not a reflection on the importance of education to the preservation of industrial heritage.

Seeking to shed some light on the relationship between heritage education and the sustainability of industrial heritage, this article discusses how heritage education can play a

\(^{6}\) Branchesi (2007), pp. 41-42
\(^{7}\) The Nizhny Tagil Charter (2003)
\(^{8}\) Bergeron (2006), p. 28
significant role in ensuring the sustainability of cultural heritage, and in particular of industrial heritage. Our research on education was guided by a fundamental question: are all educational theories and methodologies effective when it comes to Heritage Education? That is, how can education become an instrument of cultural heritage safeguard?

Examining different pedagogical strands and classroom practices, we established a distinction among three levels of Heritage Education initiatives: education about heritage, education through heritage, and education for heritage. Despite the positive contributions of each category, it is only in the last stage that education can truly promote heritage safeguard.

Since we consider that sporadic actions cannot foster education for heritage, our main objective was to produce a school History and Heritage Curriculum to direct the planning of learning experiences and to establish a continuous effort in order to achieve relevant results. Education for heritage curriculum theory was then applied to design a History and Heritage Curriculum for the town of Rio Tinto in the Northeast region of Brazil.

Rio Tinto was a preplanned company town built to house the Companhia de Tecidos Rio Tinto (CTRT) cotton textile mill and its workers. It was founded by the Lundgren family in 1917 and it was inaugurated in 1924 in a then isolated area of the state of Paraíba. At its peak it employed more than 10,000 workers. By the early 1990’s the factories closed down depriving the town from its virtually only source of income and leaving behind a poverty-stricken population. If the economic distress was not enough, the subsequent abandon of the industrial sites also meant the destruction of references related to communitarian memory and identity. In view of the absence of safeguarding efforts, as the older generations disappear, the memories of this company town are fading away with them.

2. Heritage Education as an instrument of heritage safeguard

There are different approaches to the safeguard of industrial heritage, and the choices and directions followed depend on the type of heritage we seek to safeguard and the motivations behind it, that is, depending on what we want to conserve and what values we want to conserve, we can define appropriate strategies on how to conserve it.

Education has been traditionally regarded as a necessary and effective way of promoting the safeguard of the “souvenirs” of our past life. The most important Charters concerning the
conservation of cultural heritage mention the crucial importance of education to the promotion of heritage safeguard. The Athens Charter (1931) considered that “the best guarantee in the matter of the preservation of monuments and works of art derives from the respect and attachment of the peoples themselves;” therefore “these feelings” should be promoted by “the action on the part of public authorities” and also by educators who should “urge children and young people to abstain from disfiguring monuments” and “teach them to take a greater and more general interest in the protection of these concrete testimonies of all ages of civilization.” The UNESCO World Heritage Convention (1972) asks that State Parties strengthen appreciation and respect by their peoples of cultural and natural heritage in particular through educational and information programs.

In regard to industrial heritage, as previously mentioned, the TICCIH Nizhny Tagil Charter recommends involving school students in its safeguard through the development of educational material. The Council of Europe Recommendation No R(90)20 on the Protection and Conservation of the Industrial, Technical and Civil Engineering Heritage (1990) considers that alerting the public to the industrial heritage can foster its protection and for that reason should be promoted in specific campaigns to provide information to “young people at school, who constitute a particularly receptive audience for this type of message.”

In Brazil, though education is not brought up the legislation on the safeguard of cultural heritage, heritage education is indirectly included in the Parâmetros Curriculares Nacionais (PCN), which are references for curricular orientation and the guiding lights of educational policy in the country.

Heritage Education is an educational methodology that values heritage as a primary source of knowledge and of the learning-teaching process. Its basic principle is the direct experience of heritage – tangible and intangible – seeking to achieve its understanding, valorization and safeguarding. It can take place in both informal and formal educational settings; in our research we focus on the latter.

Borrowing from Kerr’s writings on Citizenship Education⁹, by conceptualizing approaches in Heritage Education according to intended aims or goals, we can distinguish three strands:

a) Education about heritage: focuses on providing students with sufficient knowledge and understanding of the idea of heritage, heritage protection laws, etc. by applying only the cognitive competency.

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⁹ Kerr (1999)
b) Education *through* heritage: when the *cognitive* and *affective* competencies are used with a category of heritage. Heritage is used as a vehicle for teaching curricular subject, such as History, Geography, and Arts. Heritage Education is thus integrated in the curricula not through the expansion of content but rather by its use in the delivery of the existing requirements. It becomes a pedagogical resource that adds knowledge to the “traditional” schools subjects and it exceeds their compartmentalization, according to the possibilities offered by the problematization of the heritage object(s). In other words, heritage becomes a medium for cross-curricular work. This learning reinforces the knowledge component by presenting it through the “lens” of each subject area.

It moves beyond the standardization imposed by the use of textbooks and it involves students learning by doing, through active, participative experiences in the school or local community and beyond.

c) Education *for* heritage: encompasses the other two strands; it encourages that those involved in it engage with the past in an active, memorable way through a *cognitive*, *affective* and *action-oriented* interaction with heritage. Aspects of heritage are developed within their broader educational experience.

It helps provide students with the tools and knowledge required to face the world as active, critical and autonomous citizens who make a positive contributions to society.

Education for heritage also develops people’s knowledge of the multiple dimensions of their own pasts and of the contexts in which they live, as they re-interpret it in order to enrich their own life experiences cognitively and emotionally. While it allows people to understand their own traditions and have a strong sense of their own place in the world, this approach also promotes intercultural education and contributes to the discovery of cultural diversity, awareness of the positive value of cultural diversity and respect for cultural heritage.

Each approach is a requisite for the next as they foster the development of different skills and behaviors; however, only when the last aim is achieved, Heritage Education becomes a true promoter of heritage conservation. Therefore, in this research we seek to analyze how an educational process can attain education *for* heritage 10. The theoretical bases which define the educational principles and the teaching/learning methods we propose are established in the light of Horta’s observation that

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10 Hereinafter “education for heritage” and “heritage education” are used interchangeably.
educational work with the cultural heritage cannot be just a task of passing information and a prefabricated speech. (...) It takes the student or apprentice, in the process of knowledge, to identify the 'signs' and the meanings assigned to things by a certain culture, to plunge into the universe of meanings and correlations (...) finally, to engage emotionally with them through life experiences in order to be able to take ownership of these “signs” and cultural “texts”, incorporating them into the system of their mental “encyclopedia”. [translation by author]

This remark carries the implication that attaining education for heritage means challenging “traditional” education and “traditional” teaching which emphasize the acquisition and memorization of content. This form of education, defined by Paulo Freire as “banking education”, transforms students into receiving objects, inhibits their creative power and leads them to adapt to the world instead of questioning and changing it. That is why an education that seeks to foster a true sense of identity and a sincere appreciation of heritage has to overcome the limits of traditional schooling.

Within education for heritage we find two dimensions: reflection and action, which are in constant and complete interaction. If the first element is removed we are left with empty praxis – an action for action’s sake –, and without the second it is only an idle knowledge that cannot transform reality.

3. Education as strategy for industrial heritage safeguard

Teaching and learning strategies can invite students to open their eyes to examine their local and global surroundings. By discovering, investigating, and proposing solutions to important issues in their own community or other parts of the world, learners study historical processes, actors involved, different interests, motivations and points of view. As they become active researchers and producers of historical knowledge, they begin to see themselves as actors in the social process; history is no longer reduced to the life of kings or generals, but something that touches the lives of everyone and that we all take part in. As a result, they are encouraged to see such places anew and to understand their importance.

The aim of heritage education goes beyond the simple idea of learning from historical references. It seeks to encourage an active and critical perspective on the realities that make up our landscape, on the diverse expressions of the successive creations of societies which have shaped our heritage and our living environment. Heritage education should equip students with the knowledge

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12 Freire (2000)
13 Freire (2000), p. 87
and skills that enable them to make informed decisions to build the future while respecting the past. Thus, when the school community endorses and implements education for heritage, education can become an important tool for the safeguard of cultural heritage.

Heritage education helps promote the safeguard of a community’s industrial heritage, as it gives students the opportunity to take part in the historical knowledge of their communities and it fosters a collective sentiment of heritage safeguard. Umphrey supports that “through studying the history of a community that existed before they arrived and will continue to exist after they leave”, young people can “develop a personal connection to history and to place”.

We propose here six ways through which heritage education can make a positive contribution to the safeguard of industrial heritage; they do not intend to be exhaustive and certainly do not cover all the different correlations between education and heritage preservation. These propositions take into consideration what we consider to be special features of industrial heritage within the broader context of cultural heritage.

1. Heritage education promotes the **awakening of memory**. The acknowledgement of one’s own heritage is interconnected to and interdependent of memory. On the one hand, tangible and intangible witnesses of a past industrial activity – factories, power houses, gestures, myths, etc. – are not necessarily places of memory (“lieux de mémoire”). Their capacity of recalling the past depends on the existence of a memory that acknowledges and integrates them in a process of identitary recognition and construction. The place develops into a vehicle of memory as it is acknowledged as an identitary reference for those who spent part of their lives in it, as residents, as workers, as visitors, etc. Therefore, the recognition of a heritage can only rise from the awakening and the enrooting of memory. On the other hand, as Nora argues, “memory takes root in the concrete, in spaces, gestures, images, and objects”; memory feeds on the references of the past left behind in the physical space and in the minds of people, that is, on the substance of heritage.

After a factory is closed down, as generations pass by, those references of the past lose meaning to the community: the existing machines, their functions, the ways of operating them, the skills they required, are no longer understood and their technological value is gradually lost; the intangible heritage of industry – workers’ knowledge, gestures skills and traditions – fades away; architectural values crumble together with the structures.

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14 Umphrey (2007), p. 94  
15 Nora (1989), p. 9
Heritage education, thus, can provide the community with information, arguments, and images to awaken the understanding of those remains and stir up the collective memory. Through pedagogical action, a community can (re)discover, assess, and reflect upon the multiple values and significations of the tangible and intangible remains of industrial activity.

2. Heritage education contributes to a sense of place and promotes citizenship. Industrial sites were often at the heart of territorial development; as a result, they stand as chief identitarian symbols for those communities that grew around them, whether locales with dominant industries, workers’ quarters or company towns. Therefore, the safeguard of industrial heritage is closely tied to “The resurgence of identitarian feelings, of wanting to belong to a history, culture, region or district is symptomatic of the human need to know oneself and for one’s identity to be acknowledged”16.

Education must raise awareness regarding the cultural and social value of this kind of heritage – in its tangible and intangible forms –, in order to prevent the fading of the industrial identity. The goal is to promote the inhabitants’ pride and their strengthened feeling of identity through heritage and culture, and to encourage them to pass on to future generations the multi-faceted identity of their community. The process of heritage education reinforces the idea that we need to encourage the (re)discovery of those cultural assets that make up the local culture, with its unique characteristics, as well as raise awareness regarding the importance of maintaining and preserving the identitarian references of communities, such as buildings, works of art, objects, documents and social practices.

The discovery of a sense of place by a community is intrinsically connected to the recognition of the right to a past as the basic dimension of citizenship. As Marie-Claude Munoz affirms, “By developing a sense of belonging and of being responsible for their surroundings, people imperceptibly make the transition from being inhabitants to being citizens.” (Council of Europe 1995, 117) The right to a past and to the safeguard of identitarian references is a fundamental right of all communities, which enables people to exercise the full rights and responsibilities of citizenship.

3. Heritage education contributes to develop affection for industrial remains. As Bergeron defended, the appreciation of heritage cannot be imposed upon a community; “Elle a besoin d’être le fruit d’une réappropriation opérée par les citoyens eux-mêmes”17. However, this claim of heritage

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16 UNESCO (2008), pp. 20-21
17 Bergeron (2006), p. 29
can be inhibited by the distress following the decline and the closure of industrial sites which drives owners and workers alike to push for the demolition of its structures, in particular in the case of recently closed-down industrial sites.

In such context, heritage education can touch the community in a way that helps overcome the rejection and stimulate the rediscovery of the industrial past. As students are offered opportunities to investigate, get to know and assume their past, heritage education becomes a tool for (re)discovering identity and collective memory. By promoting the acknowledgment of those remains as evidences of the memory and identity of a community, heritage education stimulates an emotional involvement with heritage, from which the recognition and acceptance of the importance of heritage safeguard are born.

An example comes from Neuf Breisach, a French town founded in 1699 as part of Vauban’s fortification systems which since then has not exceeded perimeter of the walls. This geographical limitation has hindered its economic and social development in many different ways, contributing to a slow increase in population density and the weak presence of commercial enterprises. As a result, the fortifications were not appreciated by inhabitants, who regarded them as a disadvantage.

However, since July 2008 Neuf Breisach has taken a global reach through its inclusion in Unesco's World Heritage List, forming together with eleven other towns the Vauban Network in France. This acknowledgement of the heritage value transformed the fortification into an asset for the community. The Ecole Élémentaire de Neuf-Brisach has played an important role in this change. It has incorporated as a school goal to give a better image of the town and to raise awareness of the exceptional value of the city to its inhabitants. Through the project “Je tiens une place forte dans ma ville”, students investigated renowned World Heritage sites around the globe and subsequently created frescos representing such places in different parts of town; the goal was to show that their community has the same universal value as celebrated sites such as Machu Picchu or Venice, and, as a result, boost the pride of local residents and their care for the fortifications.18

4. Heritage education helps cope with the distresses of the closure of industrial sites. Industries have contributed to shape local and regional identities. In particular in villages with great level of industrial specialization or in company towns, the bonds between the community and industry are extremely tight: social roles, relationships, hierarchies and even identities are to a great extent defined by the factory. Thus, in such places, the end of the industrial activity brings not only an economic distress, but also a social and identitary trauma. The places which were known as “The

Steel City” (Pittsburgh, United States) or “wool capital of the world” (title claimed by Bradford, England, and Shaniko, United States), and the people who for many years identified themselves as “miners” or “weavers” suffer the shock of trying to search for references in a world turned upside-down.

In such circumstances, education can be a powerful tool to touch the lives of those who experienced the social upheavals associated with industrialization and deindustrialization. It can bring together the community in the investigation of their shared problems, provide them with a better understanding of their past and thus perhaps better prepare their future.\(^\text{19}\).

Educational work that focuses on the community transforms its members into experts: former factory workers, drivers, business people, local historians, old-timers in rest homes, artists, farmers, politicians, etc. are all expert on some aspect of community life – and thus allows them to discover new ways of contributing to their community and help promote or renew a sense of belonging. By addressing overreaching problems in their communities, people gain a better understanding of their own surroundings and give “meaning to the future by providing a better understanding of the past”. (Council of Europe Committee of Ministers. Recommendation No. R 98)

Education can also take more pragmatic action in assisting in the recovery of local economies experiencing economic hardship. An example comes from South Dakota (United States), where the community of Howard suffered from a farm crisis in the 1980s. The local high school designed a project “to understand the community’s cash flow – how much was earned there, where it was spent, and what it was spent for. (...) The students conducted town meetings with local business owners, consulted with the county auditor, and engaged in long debates with all stakeholders over the wording on their surveys.” With the help of computer software the students sorted the data by income level, spending location, spending category, and other parameters, and concluded that the local community spent most of their income in the larger and more distant cities. As a result of the students’ findings, “community members changed their spending habits. They began doing more of their shopping locally. (...) Revenue from local sales tax began to skyrocket.\(^\text{20}\)."

5. Heritage education can inform about the values of heritage. Often, the viewpoint conveyed by “traditional” teaching excludes citizens from the group of “history-makers” and denies students’ role as active agents of historical and social change. As a result, communities tend to disparage their heritage as unimportant or invaluable, to believe that their heritage is not in fact heritage and that

\(^{19}\) Daumas (2006)

only the initiatives of prominent groups or people are worthy of being registered and acknowledged. (Davies in Pinsky 1998, 95)

Other times, a community does not care for its heritage because it is not aware of its value either due to a somewhat “academic” or “technical” nature of the value or to an under appreciation of the importance of their own heritage. Frequently architectural, esthetical, historical or technological values are hidden behind ruins or traditions that are taken for granted.

The 15th-century Tavernole furnace in the region of Lombardy in Italy illustrates the case. As the smelting activity ceased in the early 20th century, it was turned into a sawmill, and was later left to rack and ruin. As time passed by, it was erased from the memory of the local community; when it was rediscovered by team of specialists in the 1970s, no one could say what kind of activity had taken place there. Residents were not aware that the derelict site was in fact a very important witness of Italy’s iron industry21. The work of researchers made conveyed to the community the value of that construction to the extent that Commune took on a great part of the expenses of its restoration and conversion into a museum.

The example of Tavernole reveals how education can inform about heritage values that are “hidden” within communities. If people do not have the opportunity to learn about or be exposed to the history of their own communities the value of their heritage can sometimes be underestimated. Education can empower people to recognize themselves as important social actors and value their own heritage, whether it is under the form of buildings, machines, songs, myths, knowledge, etc

6. Heritage education can assist in the identification and recording of heritage. As the end of industrial activities threatens to eradicate not only regional and national economic sectors but also their tangible and intangible remnants, the principal repositories for industrial heritage will be public and private archives and the minds of local people. Therefore, working with the local community, education can contribute to safeguard the knowledge, memories and experiences of former workers.

The Montana Heritage Program (United States) collects successful example of what can be achieved in conservation through educational programs. At the Roundup High School, with appropriate training, a class was able to assist in the creation of the local archive. Students visited the archives of the Musselshell Valley Historical Museum to assess the state of the collection and became aware of the lack of resources to organize and appropriate space to house the large number

21 Bonera (2005)
of photographs which had been donated to the museum throughout the years. Then, they began organizing this collection, making duplicate prints, gathering historical information for captions, and scanning selected photos to establish an archive at the Roundup Community Library. In the same high school, another class took part in the research for a National Historic Register nomination for two houses, known as the “twin houses”, which have been important landmarks in the town’s social history.

At the Libby High School students researched the last year of operation of the local lumber mill; they documented in words and photos each of the processes that went on in the mill. The project resulted in the production of a brochure that recorded the activity which had been part of the economic foundation of their community for generations before it was shut down forever.

It is important to highlight that heritage education does not aim to promote awareness and respect about a community’s own heritage; rather, it seeks an holistic approach that embraces the heritage of all cultural groups. When students are empowered to become emotionally, critically and actively involved with their heritage by relating to subjects in their direct environment, their eyes and minds will open to the future, and the bigger picture of contemporary issues like cultural diversity and globalization. Education for heritage proposes that students’ contact with their local community should be in fact the prelude to the appreciation of, respect for and engagement in different heritage of other social groups in their country or around the world.

This principle can be achieved through the development of a curriculum that fosters the discovery of cultural diversity, awareness of the positive value of cultural diversity and respect for cultural heritage, and the understanding and respect for all cultures, values and ways of life that are respectful of human rights. It is crucial that learning activities treat the heritages and contributions of different cultural groups with comparable dignity, integrity, and significance.

The knowledge of others and their cultures promotes the respect between individuals and peoples as well as the acceptance of diversity, which are fundamental steps towards the safeguard of heritage.

4. Implementing education for heritage: curriculum development

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22 Unesco (2006)
Change in an educational system requires change in curriculum because, as Sacristán points out, all pedagogical practices gravitate around the curriculum: “All the finalities that are implicitly or explicitly ascribed and directed to the school institution – socialization, formation, social segregation or integration, etc. – are necessarily reflected in the objectives that guide the entire curriculum, the selection of its components…”

The curriculum expresses the social and cultural aims of schooling, and it is a reflex of a specific schooling model; it is through the curriculum that schools propose learning objectives, contents and their organization, assessment, organization of time and pace, didactical planning and resources, community relationships, etc. Hence, in the pursuit of social change through education, the curriculum is a fundamental element to be taken into consideration. Even though the curriculum alone cannot change an educational system, its development is a prerequisite for the change to happen.

Therefore, for the educational transformation implied in the implementation of education for heritage needs to be absorbed into a renewed school curriculum. The success of heritage education relies on its integration as an established and continuous element of the education system, from the time children start primary school, until the moment they leave secondary school and start making their own contributions to the heritage of tomorrow.

An education project requires that educators select and adopt a set of educational purposes and of pedagogical guidelines which direct the organization and development of their educational practice; the choice is based on the interaction between political, philosophical, didactical, pedagogical orientations. The education project integrating all of these elements is materialized as a curriculum.

Despite the variations in the conception of curriculum by different schools of thought, there are some shared views: the curriculum is some kind of plan which guides learning in order to reach educational aims and/or objectives; it also defines what is taught (content, skills, knowledge) and how it is taught (methodology); finally it proposes how aims, objectives, content, skills, knowledge can be evaluated.

As Skilbeck affirmed, a precise and restricted definition of curriculum has not yet been agreed upon. We argue that a precise and restricted definition cannot be agreed because of its inherent subjectivity: the curriculum is a product of particular world views, principles, cultures,

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23 Sacristán (2008), p. 17 [translation by author]
24 Skillbeck (1984)
administrative systems, etc. It is always the result of a selection since out of the wide range of possibilities: we single out knowledge, skills and values that we reckon should be embraced by education. Therefore, a curriculum cannot be fitting for all contexts and it needs to be developed to meet the needs of each individual scenario.

The curriculum developed for Rio Tinto can be defined as students’ learning experiences “in so far they are expressed or anticipated in educational goals and objectives, plans and designs for learning and the implementation of these plans and designs in school environments”25.

Curriculum development is a process of moving from plan to implementation, i.e. from theory to practice. It is a process which involves the development of content, building social relationships and capacities, developing and utilizing learning materials, assessment of outcomes and provision of feedback for improvements. As aforementioned, the construction of a curriculum is choice-oriented and value-oriented because it involves making choices of the learning experiences that are appropriate and desirable for children of a given society.

In broad terms, curriculum design comprises stages of:

a) Discussion of principles, ideas, beliefs, theories and points of view about the curriculum.

b) Situation analysis: examining the context for which the curriculum is to be developed; establishing needs, verify availability of resources (human, financial, infrastructural, etc.).

c) Definition of aims: derived from observations of the situation analysis; convey values, preferences and judgments about the directions of the educational process.

d) Definition of the program: selecting curriculum model, content, and teaching/learning methods; defining specific objectives; organizing materials, resources, time schedules, teaching settings, etc.

e) Implementation: putting the curriculum into practice; developing lessons plans and learning experiences.

f) Evaluation: monitoring of outcomes; identifying strengthens and weaknesses; making adjustments; re-elaborating.

25 Skilbeck (1984), p. 21 [emphasis added]
In the following part of this article we develop steps from a) to d); the subsequent phases go beyond the scope of research and requires the actual implementation of the school curriculum.

4. Designing the Rio Tinto history and heritage safeguard curriculum

Guiding principles

As discussed above, the design of a curriculum needs to take into consideration cultural and social parameters, but also administrative and legal frameworks. In Brazil, education is defined and regulated by three key legal texts: the Federal Constitution of 1988, the Law of Directives and Bases of National Education (LDB – Lei de Diretrizes e Bases da Educação Nacional; Law no. 9394, 1996), and the National Curricular Parameters (PCNs – Parâmetros Curriculares Nacionais, 1997).

The Constitution determines that education is a social right, i.e. only a right of the people, but also an obligation of the State. The goals of education are contained within the larger framework of the democratic principles that legally guide the Brazilian State and, therefore, they should aim the “preparation for the exercise of citizenship”.

The Constitutional text establishes that education should assure the respect for national and regional cultural and artistic values (Article 210). It also assures that education will work towards the support of and respect for the country’s cultural diversity (Article 242 – “The teaching of Brazilian History shall take into account the contribution of the different cultures and ethnic groups to the formation of the Brazilian people”).

Policy and planning of national education result from the combined application of the Constitutional text and the LDB. The two general principles of the LDB are freedom and ideals of human solidarity (Article 2), from which stem the guiding principles of national education. These principles must pave the way towards reaching the finalities of education, which are the integral development of students to their full potentialities, prepare them to exercise their rights and duties as citizens, and qualify them to the labor market.

The LDB also sets the organization of the national schooling system under the notion of “articulate decentralization”. That is to say that all the instances of public power – Federal, state and municipal – have specific attributions in the implementation of the national system that work in way to complement one another.
Perhaps one of the ways in which decentralization is most felt in schools is at the technical-pedagogical level. While the LDB determines that a common national curriculum is mandatory for Basic Education\textsuperscript{26}, it grants room for it to be completed by a diversified part, established according to the social, cultural and economic context of each school (Article 26). In accordance with the principles of freedom and tolerance, the regional and local diversity of the country is taken into consideration in the making of the teaching curriculum. This is materialized as a unique Pedagogical Proposal (curriculum) developed by each teaching establishment and of Lesson Plans created by its teachers.

The common national curriculum is established by the National Curricular Parameters. They were developed by the Federal Government to guide education in Brazil and they are separated by discipline. For the purposes of this article, we examine the History PCN.

The general principles of the History curriculum for Elementary School seek to foster active citizenship through social and political participation and through civil and cooperative attitudes; stimulate not only critical analysis of social realities but also the search for solutions; promote the respect and valuing of cultural diversity and the respect and appreciation for the heritage of all cultural groups. These principles which should guide the choice of curriculum content, learning methodologies and competencies to be fostered.

In agreement with the framework of Brazilian legal texts, the proposed curriculum for Rio Tinto espouses the values of the UNESCO’s Four Pillars of Education, which were developed by the International Commission on Education for the Twenty-first Century. In the Commission’s eyes, education had the double role of fostering academic, scientific and technological advancement and also catalyzing human values to cope with the tensions of the contemporary world; to fulfill this mission, guiding principles were devised based on “four pillars” of education, and thus of the educational system and the curriculum.

The first pillar is learning to know. It focuses essentially on the mastery of learning tools in opposition to the concern over the acquisition of structured knowledge and it may regarded as both a means and an end of human existence. As a means because it is a requirement to understand and act in the world around us: to communicate with others, to integrate into the work market, or to

\textsuperscript{26} The Lei de Diretrizes e Bases da Educação no. 9394 of December 20, 1996 (Law of Directives and Bases of Education; LDB) divided the national school system in different levels of learning: Basic Education, which comprises Childhood Education, Fundamental School (Primary School, from grades one to six), and Middle School (Secondary School, from grades seven to nine). Following the alterations brought about by Law 11274 of 2006, the former begins at the age of six and includes nine years of schooling, whereas the latter has no determined initial age and lasts for three years.
simply be able to perform every-day tasks that require increasingly a combination of higher-level thinking skills; as an end because it encourages greater intellectual curiosity and therefore, brings about the fulfillment from understanding and discovering the world around us.

The *learning to know* curriculum must combine a sufficiently broad general education with the possibility of in-depth work on a selected number of subjects; it should encompass both practical problem-solving and abstract thought and it should aim at fostering higher-order thinking skills.

*Learning to do* is the second of them. This pillar builds a bridge between the school and work worlds and questions how the first can be adapted fit the requirements of the second. In the contemporary world, learning to do can to longer be associated to “training” in the sense of acquiring a skill to mechanically and repeatedly perform a certain task. The job frontiers in the new industries (knowledge and information in manufacturing industries, for instance) and the expanding service industries replace mechanical tasks with greater intellectually-challenging content. As competencies that enable people to deal with a variety of situations and to work in teams are expected in tomorrow’s workers, communication, problem-solving and interpersonal skills are assuming greater importance.

In many cases, such competence and skills are more readily acquired if students have the opportunity to try out and develop their abilities within real-life contexts such as work experience schemes or social work while they are still in education.

The third pillar is *learning to live together*. It seeks to answer the question: can we educate ourselves to avoid conflict or peacefully resolve it? The Commission proposes that the solution can be found in the adoption of two complementary approaches. On the one hand, early childhood education should focus on the discovery of other people to instill in students an awareness of the similarities and interdependence of all people; on the other hand, the later stages should provide opportunities for the involvement in common projects which allow people to work collaboratively to learn from differences, discover shared values and reduce conflicts.

The fourth and last pillar is *learning to be*, which reasserted the principle established by the Edgar Faure Report “Learning to Be: the World of Education Today and Tomorrow”, published by UNESCO in 1972. The intention of this pillar is the development of human potential to the fullest, including both mind and body. In this sense, the aim of education is to contribute to the individuals’ development: intelligence, sensitivity, aesthetic appreciation, ethics, civism and spirituality. It
relates to the preponderant responsibility of education in identitarian development and to unearth the treasures (talents) hidden in each individual. The challenge that lies within this pillar is ensuring that rather than educating children for a given society, school allows everyone to acquire the personal resources and intellectual tools needed to understand the world and behave as a fair-minded, responsible human being.

The Four Pillars theory establishes an educational proposal to develop the complex thinking required to understand and act upon our reality. It acknowledges that the formal knowledge is it vital for critical social participation, but it is not all. A Four-Pillars curriculum should consider students as an active part of the learning process and draw upon their diverse skills, interests, experiences, and cultures so that they develop positive expectations for learning; it should value teachers’ creativity and skills; and it should place emphasis on social and life skills.

A curriculum built around the Four Pillar can be a privileged means to implement education for heritage for a set of reasons. First, it promotes a quest for identity and the valorization of individual and communal identity (learning to be) that is fully integrated into an intercultural educational perspective (learning to live together) and it provides learning opportunities that discuss culture and heritage in both its individual, local, national and global dimensions. Second, it provides tool to understand and act upon reality (learning to know) so that citizens can not only learn about their heritage but also find ways to protect, defend and preserve what they consider important elements of their identity. Third, it allows for an integrated academic approach which overcomes the narrow and single-discipline orientation of curriculums. The study of cultural heritage in general and industrial heritage in particular requires an interdisciplinary approach to stimulate its full appreciation and – hopefully – subsequent safeguard: there are elements of architecture in buildings that require artistic understanding; there are machines that apply principles of physics; there are workers’ movements that require knowledge of history and politics, and so on. Finally, the Four Pillars also foster student-center and problem-solving learning, which empower students to become critical and active citizens who are motivated to and capable of transforming their community.

**Situation Analysis**

The municipality of Rio Tinto is located in the Northeastern state of Paraíba in Brazil. It has a total area of 466 km² and lies 62 km north from the state capital João Pessoa. Incidence of poverty in the town is high: the Instituto Brasileiro de Geografia e Estatística (IBGE) indicates that the 64.24% of its population are below the poverty line. It should be noted that the Census carried out
by the IBGE in 2001 estimated that nearly half of the 22,311 inhabitants of Rio Tinto are aged twenty-nine or less.

Since the closure of the CTRT factory the municipality has lost main source of revenue. Not only inhabitants’ income depended upon the salaries paid by CTRT, but also the local government relied on the tax collection from the industrial activity. Nowadays the region’s major economic activity is the intensive cultivation of sugarcane for ethanol and sugar production, which was introduced in the mid-seventies and early eighties in the context of a strong government policy incentives and tax credits of the National Alcohol Program. More recently, shrimp farming has been introduced in the area. Both activities have caused much harm to the local environment, including deforestation and water and soil pollution.

Image 1: Derelict industrial buildings of the The Companhia de Tecidos Rio Tinto. (Source: personal photo by author)

The education system in Rio Tinto is comprised of public Basic Education schools (maintained either by the state of Paraíba or by the Municipality of Rio Tinto), private Basic Education schools, and one Higher Education institute (Universidade Federal da Paraíba, Campus IV) maintained by the Federal Government.

The following Tables show the distribution of schools, students and teacher according to the schooling level (Elementary, Secondary or Higher Education) and their administrative nature in the year of 2010.
The data registered by the IBGE indicate that number of students enrolled in Elementary School is more than four times higher than those in Secondary School, but the difference in student ratio per grade in each level is not that high: 546 per grade (8 grades) in the first, and 317 per grade.
Nevertheless, the difference in teacher/student ratio is striking: 1:18 in Fundamental School and 1:30 in Secondary School. Finally, the average number of students in each school establishment is contrasting: 121 students per school in Fundamental School, while all the 953 students of Secondary School share only one building.

| Table 4: Years of schooling for resident persons 10 years of age or over in Rio Tinto in 2008 (source: IBGE) |
|--------------------------------------------------|--------------------------------------------------|
| Resident persons 10 years of age or over | Percentage of total population 10 years of age or over |
| Without instruction and with less than one year of schooling | 3.800 | 21.36% |
| With 1 to 3 years of schooling | 5.881 | 33.06% |
| With 4 to 7 years of schooling | 4.596 | 25.84% |
| With 8 to 10 years of schooling | 1.678 | 9.4% |
| With 11 to 14 years of schooling | 1.483 | 8.3% |
| With 15 years or more of schooling | 140 | 0.78% |

Table 4 indicates that more than half of the inhabitants of Rio Tinto who are ten years old or more either has had no schooling experience or spent at most three years in school. According to a research carried out by the Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira (INEP) in 2003, average of schooling in Rio Tinto is 4.4 years, which is not even enough to complete Primary School.

This is a common reality in Brazil where the national average of schooling is less than four years. As the UNESCO (2009) affirmed in its assessment of the educational system in the country, “not all Brazilian citizens are in a position to fully exercise their right to high quality life-long education.”

| Table 5: Illiteracy percentage for resident persons 10 years of age or over in Rio Tinto in 2003 (Source: IBGE) |
|--------------------------------------------------|--------------------------------------------------|

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27 Law no. 11.274/2006 that established nine years of Fundamental School granted schools a nine-year deadline to adjust to the new requirements. Schools in Paraíba have not yet implemented the nine-year system.
<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - 14 years old</td>
<td>21.7%</td>
</tr>
<tr>
<td>15 years old or over</td>
<td>33.7%</td>
</tr>
<tr>
<td>15 - 19 years old</td>
<td>15.2%</td>
</tr>
<tr>
<td>20 - 29 years old</td>
<td>24.7%</td>
</tr>
<tr>
<td>30 - 44 years old</td>
<td>29.7%</td>
</tr>
<tr>
<td>45 - 59 years old</td>
<td>42.1%</td>
</tr>
<tr>
<td>60 years old and over</td>
<td>61.3%</td>
</tr>
</tbody>
</table>

Economic exclusion is reflected in illiteracy indicators: 44.4% of the population whose income in at most one minimum wage is illiterate, while the illiteracy rate is 8% among those who earn more than ten minimum wages.28

An analysis of the current History Curriculum in Rio Tinto public schools was carried out based on the Projeto Político Pedagógico of the municipal schools from Grades one to five and on information obtained directly with the History teachers of the municipality for the other levels.29

The History Curriculum from Grades one to five does not include the study of the local history or town’s industrial heritage. The windows of opportunity for teaching about the local past are not used. For instance, in Grade 4 the role of the immigrants in constructing Brazilian cultural diversity is studied, but they do not look for examples in their own community which was greatly transformed by several immigrant peoples.

According to all three teachers, their History program does not include Rio Tinto’s history, though they acknowledge the importance of teaching it: “It is interesting for the students to learn about the history or the origins of the town where they live.” (teacher Marcos Aurelio do Nascimento)

They also considered important to safeguard the industrial remains for academic purposes as well as for their memory value:

We can only show the effects of the Industrial Revolution on the contemporary world if we comment on how fabrics were produced in the former industrial activity. (teacher Antonio Fernandes do Silva)

The remains are the true sources of the city, which was born from the textile industry. (teacher Marcos Aurelio do Nascimento)

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28 The number of inhabitants of Rio Tinto that earn up to one minimum wage and those who earn more than ten minimum wages accounts for 30% and 0.71% of the population, respectively.

29 The Projeto Político Pedagógico for the initial cycles was supplied by the Secretaria de Educação (Municipal Secretariat of Education), but the curriculum for the other cycles was not available. In Rio Tinto there is only one school that teaches grades six through eight and there are five History teachers currently working there. We applied a questionnaire that was answered by three of them.
Despite this recognition, education is not used as an instrument to promote the safeguard of their heritage. Both the curricular document and the teachers’ answers indicate that the main obstacle to the incorporation of local history into the school curriculum is the lack of didactical resources. In fact, the Projeto Pedagogico presents a superficial narrative of the town’s history containing incorrect pieces of information as basic as the name of the founders of the company. The teachers also pointed out the lack of initiative by the public administration to develop a curriculum addressing local issues.30

c) Curriculum Aims

The overall aim of our curriculum is that school education in Rio Tinto becomes a promoter of the safeguard of the town’s tangible and intangible industrial heritage, and of the appreciation and protection of the cultural heritage of other cultural groups.

Definition of the program: Curriculum model

Curriculum design includes with the crucial choice of an appropriate curriculum model that can absorb the educational project that we support (the principles, methodologies, aims, objectives, selected content, and so forth).

The dominant mode of curriculum development today is couched in the theory advanced by Tyler. In this light, education is most often seen as a technical exercise. Objectives are set, a plan drawn up, applied, and the outcomes (products) measured. In view of its focus of the final outcome, or the product, Tyler’s curriculum model is commonly known as the product form.

Tyler’s curriculum was based on four fundamental questions:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained?31

30 It is important to highlight that the history of the Lundgren family and its enterprises has not yet been the object of a thorough study, and that teachers are confronted with the lack of appropriate sources of information to incorporate the town’s local history into their activities.
31 Tyler (1949)
By reflecting on these questions we can arrive at the four major steps of curriculum development: selection of aims, goals and objectives; selection of learning experiences and content; organization of learning experiences; and evaluation of the extent to which the objectives have been achieved.

Tyler’s model deeply affected the course of curriculum design. It advanced a fundamental that decisions about the ends of instruction, the objectives, should be made first and that all other decisions should follow. He reasoned that it was first necessary to have clearly in mind what is to be taught before actually proceeding with designing instruction. To Tyler “Objectives become the criteria by which materials are selected, content is outlined, instructional procedures are developed and tests and examinations are prepared”\(^\text{32}\).

![Diagram of Tyler's product-based curriculum model (Tyler 1949)](Image 2)

However, there are two weaknesses in this proposal: the first is that the curriculum is planned as a linear progression of one step to the next; as result, changes carried out at one stage do not affect its precedent step. Therefore, the readjustment and renewals have to always begin by reassessing the established objectives. Second, it places emphasis on the outcome (objectives) and

\(^{32}\) Tyler (1949), p. 3
the capacity to measure them (evaluate) lessening the importance of how the objective can be achieved; these leads to the formulation of automatic and un-reflexive behavioral objectives which are easier to the evaluated. Third, as the objectives inevitably exist prior to and outside the learning experiences they take much away from learners, which can end up with little or no voice. They are told what they must learn and how they will do it. If the program is strictly followed through there is not much room left for student-teacher dialogue. Finally, it can easy disregard the appropriateness of the objectives for each classroom scenario, as there is no initial diagnosis to try to identify the specific educational needs before writing the objectives.

To tackle those issues different solutions have been advanced. The work of Taba\textsuperscript{33} renovated the linear product-based model especially by adding a first phase in which the needs would be identified before proceeding to determine the objectives. But in practical sense, hardly does curriculum development follow this careful pattern. The problems in the education system that generally prompt curriculum decisions may start from any of the steps in the curriculum development process. Therefore, the curriculum process is not a linear procedure; it is in fact complex and interdependent. Wheeler\textsuperscript{34} and Nicholls and Nicholls\textsuperscript{35} have proposed cyclic models in order to transcend the lack of integration between the phases of curriculum design and also to place more emphasis on the process of achieving the proposed objectives.

\textsuperscript{33} Taba (1962)
\textsuperscript{34} Wheeler (1967)
\textsuperscript{35} Nicholls and Nicholls (1972)
A product approach to the curriculum would specify learning outcomes in the cognitive, affective and psychomotor domains. This fragmentation of human abilities has no place in a process approach to the curriculum. The process approach is a holistic approach and therefore regards human abilities as a unity. The intention of a process curriculum would be to provide opportunities to develop attitudes, morals, values and capacities (information processing skills, problem solving skills, social skills, manipulative skills, observation, communication, etc.). The means of developing these abilities would be through providing appropriate learning experiences.

We thus consider that the process model would better accommodate the active student engagement required to attain education for heritage.

Definition of the program: Method

As aforementioned, heritage education must integrate praxis and knowledge; therefore it must incorporate “active educational methods, cross-curricular approaches, a partnership between the fields of education and culture and employing the widest variety of modes of communication and
Therefore, we support that education for heritage should be implemented with the pedagogical framework of Contextual Teaching and Learning (CTL).

The CTL system is an instructional approach that seeks to help students find meaning in the academic material they are studying by connecting academic subjects with the context of their daily lives, that is, with the context of their personal, social and cultural circumstances. Its aims and methods are coherent with UNESCO’s four pillars of education.

The CLT approach supports that education should be problem-based. In a meaningful education experience knowing must come through doing:

When students formulate projects or identify interesting problems, when they make choices and accept responsibility, search out information and reach conclusions, when they actively choose, order, organize, touch, plan, investigate, question and make decisions to reach objectives, they content to the context of life’s situations, and in this way discover meaning.

Therefore, in a CTL context content should be delivered through overreaching problems, that is, problems that are essential to understanding content area, require students to use higher order thinking skills, have no single obvious right answer, and are relevant to and draw from students’ experiences. While problems must be sufficiently complex and have no obvious answer, students must be capable of obtaining, managing, and evaluating information that will lead to a reasonable conclusion. Choosing the right problem requires teachers to consider the age, abilities, and prior experiences of all students.

It should, ideally, comprise phases of student engagement, inquiry and investigation (conduct interviews, read newspaper articles, analyze statistical data, etc.); performance (create graphs, design a multi-media presentation, write a report, prepare posters, etc.), ideally presented as “gifts of scholarship” to the community; and debriefing (discussing and questioning final results, proposing action, etc.)

To solve overreaching problems, students usually draw upon multiple content areas; therefore, this approach can be an important component in fostering integrated learning for students encouraging them to apply skills across several content areas.

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38 Johnson (2002), p. 3-4
39 Wiggins (1998)
Problem-based teaching and learning also helps bring together knowledge and the physical and social context in which it develops and, consequently, overcome the dualism between the abstract and the concrete, between knowledge and practice. As Johnson emphasizes, “learning by doing causes us to make connections that yield meaning, and when we see meaning, we acquire and retain knowledge and skills”\(^{40}\).

Another teaching and learning strategy in CTL is using multiple contexts. Students tend to retain higher-level knowledge and skills when their learning experiences are framed by contexts that are as close to real life as possible\(^ {41}\). Real-world learning allows students to build a greater depth of understanding, based on personal experience, and it leads to numerous departure points for developing their own interests.

Therefore, learning in multiple contexts (i.e. school, community, workplace, family) invites students to make connections that reveal meaning. It is important to underline that using multiple contexts in teaching does not necessarily mean out-of-classroom experiences. In many circumstances practicality will prevent teachers from carrying activities somewhere else rather than the classroom; however, that should not inhibit students from engaging in “authentic” learning as “real-life” situations and environments can be recreated and simulated in the classroom. Exploring contexts and situations that hold greater personal importance for students can generate greater intrinsic motivation and, as a result, provoke and sustain student interest.

To stimulate the appreciation of heritage and reinforce the existing connection between history and cultural assets, heritage assets should be included in the multiple contexts of teaching and learning.

Promoting respect for cultural diversity and for the understanding of the cultures of others is central to the CTL approach, and therefore it draws upon student diversity. CTL considers that differences in values, social traditions, and perspectives can be the impetus for learning and can add complexity to the classroom experience and that interchange between competing world views lends richness to education.

Furthermore, CTL supports self-regulated learning. This strategy is based on the belief that learners are not passively being ‘instilled’ with information and knowledge, but rather that they are actively involved in reorganizing and reconstructing their existing knowledge with new knowledge. Therefore, “Education should help students to be aware of their own thinking and to direct their

\(^{40}\) Johnson (2002), p. 11
\(^{41}\) Sears (2002)
motivation toward valuable goals.”\(^{42}\) The goal is for students to become lifelong learners who are capable of seeking out, analyzing, and using information with little to no supervision.

To do so, students must learn how to acquire skills and knowledge on their own. This is only possible if learners become aware of how they process information, master a range of learning tactics and know how to match problem-solving strategies to different tasks and challenges. In this sense, self-regulated learning frees students to use their own learning style, advance at their own pace and explore personal interests.

Ultimately, in the contextual approach, to teach is to strengthen the decision to learn and to motivate students to view of academic learning as something they do for themselves rather than something they do for others.\(^{43}\)

CTL uses *interdependent learning groups* as a teaching and learning strategy. Students work together cooperatively to accomplish shared learning goals and seek outcomes that are beneficial to all those with whom they are linked. This opportunity of interaction enhances learning by providing students with opportunities to adopt various perspectives, think reflexively, share knowledge, focus on goals, and allow all to teach and learn from each other.

Group members can promote each other's success by: giving and receiving help and assistance; exchanging resources and information; giving and receiving feedback on taskwork and teamwork behaviors; challenging each other's reasoning; encouraging other group member’s efforts to achieve; mutually influencing each other's reasoning and behavior; engaging in the interpersonal and small group skills needed for effective teamwork; processing how effectively group members are working together and how the group's effectiveness can be continuously improved.\(^{44}\)

Finally, CTL is intended to build knowledge and skills in meaningful ways by engaging students in real life experiences and therefore *employs authentic assessment*. The goal of assessment in a CTL environment is to examine if students are learning and practicing how to apply important knowledge and skills for authentic purposes.

Unlike “traditional” forms of assessment which are mainly concerned with grading students in order to pass or fail them, authentic assessment is used to monitor student progress. The process of

\(^{42}\) Montalvo and Torres (2004), p. 1
\(^{43}\) Zimmerman and Schunk (1998)
\(^{44}\) Johnson & Johnson (1998)
learning is examined through feedback, reflection and redirection of performance which students with opportunities and direction for improvement. For this reason, authentic assessment is carried on continuously by drawing on multiple sources of information over time (portfolios, journals, etc.). Moreover, authentic assessment is not seen as a separate moment of the teaching and learning process, being rather blended into it.

It is also important to stress that CTL strategies do not concern only teachers and students, but rather they promote the participation of the entire school community (family, residents, etc.) in the educational process.

**Definition of the program: Curriculum content**

As aforementioned, the History curriculum of Rio Tinto today is only a syllabus; its content is limited to a list of subject topics that should be taught during the school year. Though this approach impoverishes the teaching/learning experience, it serves as a guide to teachers as they plan their learning activities and experiences.

Our renewed curriculum does not seek to eliminate the subject topics because a curriculum based only on a set of skills and knowledge or concepts can be rather abstract and difficult to grasp and implement. The subject content was selected according to two central themes: “Heritage and Citizenship” and “Rio Tinto: national and world connections”.

**Final product: the History and Heritage**

The development and application of the phases discussed above resulted in the production of a History and Heritage curriculum document to be presented to the municipality of Rio Tinto. The observations drawn from the situation analysis and the principles of UNESCO’s Four Pillars guided the planning, selection and organization of content. As the phases of selection and organization of method (Contextual Teaching and learning) and evaluation (Authentic Assessment) were discussed above, we have not repeated them in the curricular document.

The process of developing a curriculum for Rio Tinto is summarized in the following Organization Chart:
5. Concluding remarks

Although the residents of Rio Tinto are emotionally attached to their town and the tangible and intangible marks of its past, this feeling has not yet been translated into actions to ensure the necessary safeguard of their heritage. The disordered adaptation of the industrial remains and the lack of cultural and educational programs are gradually erasing the memory of the economic activity from which the town originated.

In order to address this matter we proposed the development of a History and Heritage Curriculum for Fundamental Schools in Rio Tinto that combines the learning of local history with active heritage safeguard practices. The overall goal of our curricular proposal is to empower students to become active citizens and to supply them with the required knowledge and skills to have responsible, ethical and heritage-friendly attitudes in their communities.

In the case of industrial sites, such as Rio Tinto, where the termination of the economic activity was a severe and recent blow to the community, education can become an even more effective instrument to protect heritage assets because of the strong personal connections between
the heritage and the community. Thus education can become a useful avenue to channel this attachment towards the appreciation and safeguard of industrial heritage.

There are innumerable possibilities offered by schools to safeguard initiatives: organize exhibitions, lectures, awareness campaigns; help establish local archives or an oral history database; they only need a suitable teaching and learning approach. We believe that a continued interaction between students and heritage (their own and others) set by the Curriculum guided by Intercultural principles and applied through a CTL methodology which considers students as subjects of the learning process (as opposed to traditional methods where they are passive objects) can bring out heritage-friendly attitudes and, ultimately, stimulate the safeguard of heritage.

Certainly the curriculum only cannot provoke a transformation in the educational system, but it can become a guiding document to motivate change. To achieve more effective educational results, there needs to be the public commitment to provide teachers with appropriate pedagogical training, with collaborative planning opportunities, and with the necessary learning resources.

Furthermore, it must be said that we do not consider the curriculum designed here as a closed and finished document. It is a proposal that it is open to changes resulting from the future collaboration with the local school community. Similarly to heritage values, a curriculum cannot be imposed upon a community; its implementation and effectiveness depend on its embracing by all stakeholders, otherwise it becomes a sterile administrative measure. Therefore, it must be exhaustively discussed and analyzed to make the required changes.

References


