Technology, culture and citizenship in education for creative economy in Brazil: the case of the NAVE Project in Rio de Janeiro

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Abstract— The aim is to examine how the NAVE Project in Rio de Janeiro was able to develop and stimulate capacities for creative economy in its students, despite the socioeconomic and political crises Brazil and the state of Rio de Janeiro face. Based mainly in the theoretical work of Araya (2010), Venturelli (2000) and Hearn & Bridgett (2010) and following the methodological steps of Sécca& Souza (2009)with bibliographic and document research of NAVE Project in the city, we argue that the full-time activities carried out by NAVE intertwine technology, cultural activities and citizenship with the school life and encourage students to critically appropriate the main languages and techniques for creative economy. The conditions of possibility for this are, in this case, connected to the construction of partnerships between the government and the private sector, which can bring alternatives for funding activities in times of political and economic crises. However, as these partnerships face many difficulties to be constructed and maintained in many parts of the country, NAVE also develops low-cost and no-cost teaching activities which can be applied by professors in other public – and also private – schools in Brazil and develop transdisciplinarityamong the technical / scientific, cultural and business pillars of creative economy.
Keywords— Creative Economy; Brazil; Rio de Janeiro; NAVE Project; Education.

I. INTRODUCTION

The capitalist society has been going through multiple transformations, such as the transition from materialistic to post-materialistic values, which can be seen in the attendance of aesthetic and intellectual needs of individuals and the emergence of the knowledge society. In the context of the fourth Industrial Revolution, an economy based on the intensive use of capital and laborchanged into one in which capital is based on people's intellectual resources (Bendassolli et al., 2009).

In the core of this "new economy", it is possible to identify several diversified activities based on individual and collective talents or abilities, such as crafts, fashion, the classic cultural industries – audio-visual, music and book sectors – and the new software and games sectors (Miguez 2007). These industries can be included into what can be called "creative economy", which refers to activitiesthat encompass the production, distribution and fruition of "goods and services based on texts, symbols and images and a diverse set of activities guided by the creativity, talent or individual ability" (Jesus & Kamlot, 2017).

"Creative industries",which are parts of creative economy,are related not only to a transformation of sociocultural values in the capitalist economy, but also to development policies, especially on issues related to innovation and originality of ideas, an educational system that stimulates creative freedom and independent thinking, incentives for state and private investments in research and additional access to sources of capital for creative business (Venturelli, 2000). Creative economy also highlighted the need for collaborative networks and models, as well as the development of new technologies to produce creative goods and services and generate creative content. These changes not only gave the consumers freedom to search for creative products in a more autonomous way, but also brought

possibilities for the generation of income and jobs, the extension of access to cultural goods and services and the promotion of social inclusion, especially in underdeveloped and developing countries (Reis, 2008).

Education plays an important role in the development of creative and innovative skills. The educational process for creative economy is usually based on a multidisciplinary perspective and includes sensitivity, entrepreneurial attitudes, social and communication skills, understanding of sociocultural dynamics and market and political analysis. This process results from the development of structural changes in the capitalist production, especially the greater relevance of information and communication for its development; the growing importance of globally fragmented production in continuous cycles of innovation and creativity; and the emergence of alternative production centers all around the world (Araya, 2010).

However, there are limited possibilities for the development of capacities for creative economy in Brazil, especially in high schools. Interdisciplinarity and transversality of the acquired knowledge by students is rarely stimulated. The development of artistic and critical aptitudes and the investment in disruptive and incremental innovation are usually replaced by the transmission of acritical knowledge for students, necessary for them to enter university and reproduce the logic of an industrial system based on the development of technical competences which marginalize creativity and critical notions of citizenship. Besides the problems in the organization of the educational curriculum for high schools in the country, there are also issues related to public education institutions, especially those associated to corruption and misuse of funds for education by politicians and businessmen (Jesus &Dubeux, 2018).

Nevertheless, there are some examples which show possibilities to develop alternative models that can strengthen the students' technical, creative and critical abilities, necessary for the development of creative economy in Brazil. One example is the Advanced Educational Center Project – NAVE, its acronym in Portuguese –, a program oriented to the research and development of educational solutions using the communication and information technologies in high school and educating students for professions in the digital area. NAVE was developed by Oi Futuro – a creativity and innovation institute led by Oi, a telecommunication company– in partnership with the State Departments of Education of Rio de Janeiro and Pernambuco. The initiative is structured on three pillars: the offering of a vocational

education integrated with the regular high school education at state public schools; the development of research and innovation activities and the dissemination of methodologies and practices developed by the program (Oi Futuro, 2018).

The NAVE schools in the cities of Rio de Janeiro and Recife – capitals of Brazilian states of Rio de Janeiro and Pernambuco, respectively – currently have 960 students and 100 educators. The student education contemplates a basic cycle in the first year of the program, when the offered technical vocational courses are presented. In the second year, the students decide for specific education formation inscript preparation, social media, multimedia, and game programming areas. The NAVE School in Rio de Janeiro – the José Leite Lopes state school, in the neighbourhood of Tijuca – drew the attention of Microsoft, which, in 2009, chose the Rio school as one of the 30 most innovative schools worldwide. In 2010, NAVE was elected as a "Mentoring School", within Microsoft's Innovative School Programs (Oi Futuro, 2018).

The aim of the article is to examine how the NAVE Project in Rio de Janeiro was able to develop and stimulate capacities for creative economy in its students, despite the socioeconomic and political crises Brazil and the state of Rio de Janeiro face. Based mainly in the theoretical work of Araya (2010), Venturelli (2000) and Hearn & Bridgett(2010), and following the methodological steps of Sécca& Souza (2009) with bibliographic and document research of the NAVE Project in the city, we argue that the full-time activities carried out by NAVE intertwine technology, cultural activities and citizenship with the school life and encourage students to critically appropriate the main languages and techniques for creative economy. The conditions of possibility for this are, in this case, connected to the construction of partnerships between the government and the private sector, which can bring alternatives for funding activities in times of political and economic crises. However, as these partnerships face many difficulties to be constructed and maintained in many parts of the country, NAVE also develops low-cost and no-cost teaching activities which can be applied by professors in other public – and also private – schools in Brazil and develop transdisciplinarity among the technical / scientific, cultural and business pillars of creative economy.

II. METHODS

Following the methodological steps of Sécca& Souza (2009) for the analysis of education in Brazil, the bibliographic research consisted of reading, selecting and

organizing topics on the general causes of the difficulties in the promotion of education for creative economy in Brazil – especially in Rio de Janeiro – and the possibilities to overcome these challenges. The next step was the analysis of documents related to the NAVEProject in Rio de Janeiro, drawn from its official channels of communication and media. The analysis of the results focused on the ways capacities for creative economy are developed and stimulated in the students at the Rio's school, despite the economic and political crises Brazil and the state of Rio de Janeiro face.

III. RESULTS AND DISCUSSION

Creative economy and education in Brazil

If educational systems are capable to fill the creative economy demands, they need to develop specific skills in the teaching practice. With the greater economic relevance of cultural and creative resources, developing countries such as Brazil needed to rethink the foundation of knowledge in their educational systems from a model based in the preparation of a standardized labor force to a more flexible one, which interconnects knowledge about the development and use of innovation to solve problems in the professional area and the society, business practices and critical political and social thought (Florida, 2002, 2005).

In this sense, advanced intellectual and creative skills that connect interdisciplinary and independent thinking are required from the earliest stages of the educational process and in secondary education. With the promotion of linkages among arts, humanities and sciences, such skills can be activated by methodologies that incorporate technologies and extraclass cultural activities into the educational process and stimulate independent actions, creative and imaginative engagement and research skills by students to produce innovation (Venturelli, 2000).

To achieve this, the educational process for creative economy should aggregate technical / scientific, cultural / creative and business pillars. The two former pillars are relevant because they allow the insertion of new topics of knowledge in creative sectors and the latter one turns them into products and services valued by the market and society (Hearn & Bridgett, 2010). However, it is important to highlight that the development of creativity by students also incorporates the valuation of traditional knowledge and practices –to think critically about past problems and imagine possible solutions for the future – and the formation of critical thinking in the light of political-economic and socio-cultural dynamics. The proposed interconnectedness goes hand in hand with the idea that collaboration on multiple platforms may lead to learning

and innovation based on collective intelligence networks that stimulate cooperation and innovation. The shift from the Fordist learning systems to systems based on experience, participation and talent developmentencourage students to become social agents and allow the interconnection among varied disciplines and critical and creative skills (Araya, 2010).

The Brazilian government recognizes that education is fundamental to creative infrastructure. For example, the National Education Plan indicates that, instead of understanding learning in terms of fixed objects transferred from one generation to another, it becomes necessary to define educational systems that support knowledge and learning in continuous cultural innovation. However, the same Plan makes clear that Brazilian educational system did not effectively deal with innovation, since it was extremely basedin an industrial model and focused on a reproductive logic. Although the problem is recognized by many Brazilian authorities, the educational infrastructure does not give enough attention to interdisciplinarity and transversality of the acquired knowledge by students. The Plan does not show ways to promote them in schools or how to strategically develop transdisciplinarity since the earliest stages of the educational process (Jesus &Dubeux, 2018).

The now extinct Secretariat of Creative Economy emphasizedthe relevance of the stimulus to transversality, which meant bringing together concepts related to cultural, technological and business areas (SEC, 2012). However, the educational model of the industrial age still prevails. The difficulties of ownership due to cost and regulatory problems regarding new technologies are connectedto a gap in the stimulation of technological skills in students and the marginalization of students' critical thinking and creativity in the teaching process (Reis, 2008).

It is also important to state that the lack of investment in creative economy is also motivated by the economic and the political crises Brazil faces, particularly the state of Rio de Janeiro. The elements make more difficult the development of transdisciplinarity and the access to innovation for creative sectors for great part of the Brazilian population. Regarding the first crisis, given the fall in the price of commodities of which Brazil remains extremely dependent, policies to encourage consumption continued in force by Brazilian government, but the side effect of this was an imbalance of public accounts, which undermined Brazilian credibility and limited the amount of money to invest in strategic sectors, such as education (Jesus & Kamlot, 2017). In the light of this reality, it became harder

to finance projects for the development of artistic and critical aptitudes in students and innovation, which would benefit not only companies, but the society in general. It would also be important to reduce Brazil's dependence on commodities.

However, the chaotic economic reality is combined with the political crisis motivated by corruption, structured in the public apparatus through the creation of personal networks and internalized in state's policies. The crisis became worse with the intensification of these personal networks, which have come to public notice even more since the beginning of the 2010s due to the greater performance of the Federal Police in investigating such cases, the greater action of the Judiciary in the punishment of politicians and businessmen involved in corruption cases and greater information brought by the media about the numerous events of corruption (Filgueiras, 2009). Nevertheless, with less resourcesbecause of misuse of public funds, the chances for investment in creative economy education became more difficult.

In the specific case of the state of Rio de Janeiro, the economic recession – coupled with the slowdown in the activities of the oil industry and the fall in tax revenues – led to the growing pauperization of the population, which was further exacerbated by the corruption spread by the political apparatus. This spread became evident from the arrest of former governor Sérgio Cabral Filho in 2016 in the context of Lava Jato Operation, as well as former secretaries and five of the seven Counselors of the Court of Auditors. The situation has led not only to a shortage of state officers' salaries, but to the gradual collapse of state government programs, such as Emergency Care Units (UPAs, their acronym in Portuguese) and Pacifying Police Units (UPPs, their acronym in Portuguese) in 2017. The chaotic situation of Rio de Janeiro – especially in its capital – complicates the access of students to schools because of the violence in many communities. Many of these students are not able to complete their educational formation because they must enter the job market earlier, in subaltern positions, or even see better opportunities of life working for drug cartels, for example.

However, when a country like Brazil must deal with economic crisis, innovation becomes necessary to boost economy recovery, and creative industries may also contribute to the creation of job and income opportunities (Li, 2013). The linkage of creative competencies into current educational programs, the encouragement of the interaction between technical schools and social initiatives and the strengthening of incubators and research centers in

creative economy have an essential role in the process of recovery. In some parts of the country, it is possible to see that public and private institutions have been dedicated to intensifying the relationship of creative economy to innovation to support creative endeavors through partnerships with schools and universities and the stimulus to incubators and creative education centers. This favors local and regional development in the basis of a "triple helix", which engages the government, the market, and the education institutions in efforts for the development of capacities for creative economy. The private sector can show its commitment to social development by funding activities for the formation of creative professionals – especially in times of political and economic crises –, because this is not only positive for the companies themselves, but for the creation of qualified workforce for the general markets in which these companies operate and the society in the light of the promotion of social inclusion through the creation of job and income opportunities (Etzkowitz, 2009).

In the development of the "triple helix", the three actors – the government, the market and the education institutions –interact across boundaries in the first phase, and their interaction is mediated by organizations and contractual offices. In the next phase, the helixes are defined as different communication systems. The interfaces amongthem operate on a distributed mode that produces potentially new forms of communication, such as in cases of technology transfer. In the third phase, the institutional spheres of the educational institutions, industry / business and government, in addition to performing their traditional functions, assume the functions of others, with the education institutionsplaying the role of regional or local organizers of innovations (Leydesdorff&Etzkowitz, 1998). When they refer to "education institutions", Leydesdorff&Etzkowitz (1998) focus on the role of universities. However, in the case of this article, we recognize the necessity to extend the reflection to basic and secondary education, because, at these levels, the students can start developing their creative and technical abilities and critical thought and produce results that not only attend the market interests, but also strengthen their opportunities for social inclusion.

Education in Brazil and Rio de Janeiro

The 1996 Guidelines and Bases of Education Act establishes that it is the state's duty to guarantee minimum standards of quality of education, defined as the minimum variety and quantity, per student, of indispensable inputs to

the development of the teaching-learning process (Brazil, 1996). According to the General Coordinator of the National Campaign for the Right to Education, Daniel Cara, the Brazilian state, through several governments, has not given priority to financing the sector. As an example of this scenario, Cara points out that, since 2010, the National Education Council has unanimously standardized investments, but to date the decision has not been ratified. The mechanism translated into values Brazil needs to invest per student each year, in every stage and modality of public education. The purpose is to guarantee at least a minimum quality standard of education. The mechanism of standardized costs was included in the National Education Plan (PNE, its acronym in Portuguese) and should have been implemented by June 2016, which did not occur. With the constitutional amendment that limited the ceiling on public spending, Cara estimates that PNE's effectiveness is even more distant. He highlights that the tendency is under-investment and the permanent inability to supply structural inputs. According to the 2017 School Census by the Ministry of Education (MEC, its acronym in Portuguese), the presence of technological resources such as computer labs and internet access is still not a reality for many Brazilian schools. Only 46.8% of primary schools have a computer lab; 65.6% of schools have access to the internet; in 53.5% of schools, the internet is broadband. The Institute for Research and Administration in Education has recommended reforms, including extending the school period, investing in technology, fostering job stability for teachers, increasing efficiency in school management, and implementing appropriate policies from the federal to the municipal level. However, many measures seem improbable in the light of the limitation of resources for education in the country (Martins, 2018).

The state of Rio de Janeiro is one of the places in the country with the greater number of public schools. Its capital has more than 1,000 municipal schools. However, the quality of education in Rio de Janeiro has been the cause of frequent student protests, such as the March 2016 protest, in which students occupied public schools to demand higher standards of educationand better conditions of learning.Between 2014 and 2015, the state of Rio de Janeiro also had a 72% drop in investment in infrastructure and maintenance. There was also no school building by the state government of Rio de Janeiro during this period, despite the promise of 177 new public schools by 2015, made before the 2014 World Cup.In case of the city of Rio de Janeiro, a survey conducted by the Municipal Department of Education in 2011 found out that 62% of the municipal school infrastructure was "poor or bad" (Longaigh, 2017).

Despite the national and state problems, the Common National Curriculum Parameters document for Secondary Education – whose approval is expected to happen through 2018 – suggests some practices that should be adopted by schools all over the country and adapted to different contexts. The document indicates the organization of knowledge into three fields of knowledge, namely Languages, Codes and Related Technologies; Natural Sciences, Mathematics and Related Technologies and Human Sciences and Related Technologies. This is grounded upon the clustering of types of knowledge that share a given subject of study and, therefore, communicate more easily, thus creating the conditions required for school practice to evolve into an interdisciplinary approach (Ministry of Education, 2018). The general competences,valid for basic education, should be strengthened in secondary education. They are indicated in Table 1, based on information provided by NAVE's Innovative Pedagogical Practices' Guide (NAVE, 2018).

Table.1: Competences to be developed, according to the Common National Curriculum Parameters

Competences	Description
Scientific and Creative Thinking	To exercise intellectual curiosity and make use of the sciences' own approach, including research, reflection, critical analysis, imagination and creativity to investigate causes, elaborate and test hypotheses, formulate and solve problems and create solutions (including technological ones) based on the knowledge from the different areas.
Communication	To use different languages – verbal, body, visual, sound and digital languages–, as well as knowledge of artistic, mathematical and scientific languages to express and share information, experiences, ideas and feelings in different contexts and produce meanings that lead to mutual understanding.
Digital culture	To understand, use and create digital information and communication technologies in a critical, meaningful, reflective and ethical manner in diverse social practices

	(including school ones) to communicate, access and disseminate information, produce knowledge, solve problems and play a leading role in personal and collective life.
Argumentation	To argue based on reliable facts, data and information to formulate, negotiate and defend common ideas, views and decisions that respect and promote human rights, social-environmental awareness and responsible consumption at the local, regional and global levels, with an ethical position in relation to self-care, other people and the planet.
Life project	To value the diversity of cultural knowledges and experiences and appropriate knowledge and experiences that enable people to understand the relations of work market and make choices aligned with the exercise of citizenship and their life projects, with freedom, autonomy, critical awareness and responsibility.
Self-knowledge	To know, appreciate and care for own physical and emotional health, understand other people in human diversity and recognizethe one's and others' emotions, with self-criticism and ability to deal with them.
Empathy and cooperation	To exercise empathy, dialogue, conflict resolution and cooperation, promote respect for others and human rights, welcome and value the diversity of individuals and social groups, their knowledge, identities, cultures and potentialities, with no prejudice of any kind.
Cultural repertoire	To value and enjoy the diverse artistic and cultural manifestations, from the local to the worldwide ones, and participate in diverse practices of the artistic-cultural production.
Responsibility and autonomy	To act personallyand collectively with autonomy, responsibility, flexibility, resilience and determination, making decisions based on ethical, democratic, inclusive, sustainable and solidary principles.
Knowledge	To value and use historically constructed knowledge about the physical, social, cultural and digital world to understand and explain reality, continue to learn and collaborate to build a fair, democratic and inclusive society.

The NAVE Project pedagogical practices in Rio de Janeiro

The analysis of the documents produced by the actors involved with the NAVE Project in Rio de Janeiro showed how the pedagogical project developed at the José Leite Lopes state school focused on the development and stimulation of capacities for creative economy in the students, despite the economic and political crises in the country and the state. To explore the possibility of the digital world, one of the projects developed by NAVE in Rio de Janeiro was the use of Facebook as a tool to verify the students' presence in the classroom and still open a virtual discussion with the class members, which awakens in the students a critical, reflexive and ethical understanding of information and communication technologies. The social network not only concentrates technical academic tasks in a closed Facebook's group formed by the teacher and the students, such as the verification of students' presence, but brings a collaborative knowledge space. The teacher can post contents related to the discipline relevant to the students, including links to texts, videos and news. The digital environment becomes not only a repository of the discipline's works and tasks, but students are invited to have a main role in the virtual environment. Beyond the delivery of academic work, they promote interactions beyond the class time, and teachers can use the virtual environment to make diagnostics, useful for the planning of the future classes. A poll with the students in the group is a good way to evaluate their interests and prior knowledge about certain topics. Another suggestion is fun or riddling advertisements that stimulate the curiosity of the students on the theme of the following class. The virtual platform could also be used to communicate school news. The students became more engaged in the subjects of the disciplines, improved the self-management of the proposed tasks and works and participated in the exercises in a more qualified way. All records made by the teacher and the class on the virtual platform formed a memory of the course lived in the discipline, which is significant for the development of the evaluation processes.Regarding the use of technology, the digital games programming activities bring interactive

exercises that simulate the programming of traffic lights. Through the experiment, students learn the basics of robotics and develop computational thinking. The activity puts students in touch with the basic concepts of logic, electronics, physics and chemistry. The activity works on experimenting, launching challenges and structuring problem-based learning and brings elements of the programming language to the classroom, in addition to being an important qualification for the job market. Living this experience with computing science brought students to other processes of research and experimentation at the school. For example, in geography, students associated the debate on energy with the creation of a robotic artefact, which lit some LEDs when the user blew a weathervane, simulating the operation of wind energy (NAVE, 2018).

Many pedagogical practices developed in the scope of the NAVE Project are low-cost and no-cost teaching activities which can be applied by professors in other public schools with no use of digital technologies (Venturelli, 2000). In the return to "analogic tasks", one of the proposed practices is called "baby steps", in which the teacher structures a process for students to better develop activities of medium or high complexity. Students are invited to follow a path organized by themselves or the teacher in simpler and more orderly logical steps. When they finish every small step, they advance to the following one more easily, with more motivation and understanding the prerequisites and interdependence between the stages of the exercise. A math teacher may, for example, present a problem to students that will require the resolution of various equations. In this case, the teacher should suggest this resolution in small steps, orient first to isolate variables, then solve the formulas in the parentheses. A Portuguese language teacher can ask the students to elaborate a dissertation. The teachers indicate that students must choose and write the topic first, then write a sentence that summarizes the approach they want to use, create a list with all the arguments, and ultimately transform these arguments into paragraphs. Students are encouraged to complete all the steps. But even when they cannot reach the desired results, they can present part of the process to the teacher. In these cases, students may have a clear idea of what prevented them from continuing, how much they were lacking for the completion of the activity and may still think of more effective strategies for finalizing the work (NAVE, 2018).

Artistic expressions may work with contents related to self-knowledge, empathy, dialogue, cooperation and respect. For example, the debates on the roots of black music not only creates a dance ball in school, but historical issues are brought into discussion, such as the urgent and fundamental debate on racism in Brazilian society. The work with Brazilian popular music and popular books for young people may help the study of history connected with other areas of knowledge, such as literature. In the activity called "Drummond in pieces", students read passages of poems and thoughts of the Brazilian poet Carlos Drummond de Andrade and participate in a meeting to debateartistic issues. The aesthetic and sensorial experimentation base studies on the author's work. The stages of Drummond's production are presented to the students as well as the aspects of these stages. The activity is performed in the school library, with the class organized in a large round of discussion and the clippings with the texts are scattered in the center, with the written face down. Each student must remove a paper cut and a round of reading is done. They are invited to cheerfully declaim the passage and make a free comment. Students are encouraged to talk about the work and about themselves, what they feel when reading and how the author's words can affect them.After everyone hears the "patchwork" of the poet's work, a biography of Drummond is presented, relating the historical context to the characteristics of each phase of his work. Then the analysis of the fragments of the texts is resumed, now in a more qualified way. Each student is asked to reflect on the passage that is in their hands and try to identify characteristics related to the phases of Drummond's literary production. They are oriented to "dissecting" the fragment, identifying and highlighting expressive features such as language figures and punctuation(NAVE, 2018).

In the activity "Funk is culture", students are invited to relate Philosophy and carioca funk. Issues related to funk culture that have a strong impact on youth formation – such as violence, sexuality, gender issues and prejudice – are discussed. Students reflect on the relationship between aesthetics, art and the cultural industry. Then they prepare lectures on funk for the whole school, with the knowledge built up throughout the process. A funk ball is held at the end of the lecture cycle. Using a musical manifestation that is part of the students' culture made engagement and motivation possible. The practice also made them think about social prejudice in relation to some areas of the city, such as the favelas, making connections with the reflections on aesthetics. As many students live in these communities, this was also a time to reflect on their own aesthetic experience. In the "Zé's Round" activity, students participate in a series of creative processes and sensory experimentation with black dance, afro cinema and pop culture workshops, poster creation and musical

composition. The understanding of other cultures is stimulated in the activity "In the other's shoes", in which the students know the biographies of migrants and reflect on the refuge issues.They can experience the feeling of putting themselves in each other's shoes, empathizing and reflecting on how to deal with the differences (NAVE, 2018). The respect for difference is necessary to stimulate the contribution from many cultures to creative and critical thought (Reis, 2008).

In the discussion of aesthetics, the activity "The city through a new perspective" developed in the scope of the NAVE Project in Rio de Janeiro invites students to take another look at the city where they live. Students make photographic records, illustrations or paintings of the area where they live, as if they were foreigners. In this exercise, they are encouraged to articulate aesthetic content learned in the discipline of philosophy and stimulated to break the exclusively Apollonian beauty standards. All the students must seek other aesthetic standards, based on experience. Students may portray landscapes, public spaces, objects, buildingsand monuments, among other references. Photographs, drawings or paintings can convey impressions that highlight the aspects of the territory in which they are inserted, as well as more universal references about the city. In the activity "The stories that photos tell", students photograph everyday situations in and out of school. The combination of these images inspires, in a second moment, the creation of original stories, which will be transformed by the students themselves into small videos. Students learn how to produce a script according to the technical norms and the theoretical foundations for the construction of arguments of audio-visual works. After the construction of technical roadmaps, the students are gathered in a session for sharing the creations. Each script is read aloud and other students can give suggestions, improving the quality of each proposal.The last step of the activity is to turn scripts into videos. In these productions, students should use the photos that gave rise to the story. In addition to the images, they can insert audios, songs, dialogues, subtitles and other effects, always according to what was conceived in the script (NAVE, 2018).

To develop their ability of argumentation, students engage in activities such as "When I was 10 years old". They are invited to write a letter for themselves imagining they were 10 years old. The proposal is to produce a letter that brings reflections and recommendations that young people feel would have been helpful to themselves when they were that age. This activity challenges young people in the construction of a narrative from a point of view

displaced in time, which mobilizes their creativity. Students also reflect on their place in the world, within a society. One way to make the sharing of content more dynamic is to ask them to exchange the texts with each other. Thus, each one reads the letter of the colleague and identifies the main themes. Everyone talks in groups and signals which issues are most recurring. Finally, students are invited to share their feelings and individual learning with the experience, reflecting on the importance of the reading. The fact of promoting sharing and debate about the contents of letters also means that the activity, in principle an individual written expression, becomes a collaborative process of textual production, which is rich in reflections on youth, the process of growth, relationships and emotions. In this activity, it is important to indicate the competences of textual coherence, spelling and grammar, argumentation capacity and comprehension of the proposed theme. In the process of learning foreign languages, in the "In English, please !" activity, the students present, in English, the final works of other disciplines. The exposure should be done as a pitching, which in business language means presenting something to someone with the goal of convincing the other to invest in that idea. It is a short presentation, very well planned and with a total focus on the audience to which it is prepared (NAVE, 2018). As Florida (2002, 2005) argues, these activities promote the interconnection of knowledge about the development and use of innovation to solve problems in the professional area and the society and business practices.

In the learning of biology and chemistry, students are engaged in an activity called "Read the label", in which they analyse labels of processed foods and drinks consumed in their daily lives. Students work in groups and evaluate the nutritional table and ingredient list of various packages, noting and comparing the available data.The activity begins with the separation of food and drinks packaging by categories (drinks, breads, pastas, sweets and biscuits, meats, oils and margarines, breakfast cereals, grains). The teacher organizes the tables of the classroom in working islands according to these groups, which can vary from what is available. Students highlight three labels that are made up of too much of an ingredient and relate that excess to some disease.The teacher then asks students to identify the healthiest foods in the group of labels analysed by the group.When the student makes the experiments brought by this practice, he/she can compare his/her diet with the parameters of a healthy one. They can check what needs to be changed in their consumption and better identify which foods would be the sources of quality nutrients. In "History

board", students research, identify, and experience board games and cards that relate to the contents of history. Their curiosity about the presented themes is instigated with the gamification, which can also be seen in the "Teaching literature with games" activity, in which students are stimulated to create educational games about literature. The productions are inspired by traditional popular analogue and digital games and have low cost. They can be made with recycled materials. The games, together with the texts which construct their rules, gave students the ability to create a sequence in their process of knowledge construction. The concentration and organization improved greatly, as well as their understanding and assimilation. The same can be said about the "Geography Volleyball" activity, in which the classroom is organized as a volleyball court. The class is divided into two teams, which must be positioned on opposite sides. The questions that the teacher asks functions like the ball of the game, which goes from one side of the field to the other according to the students' correct answers. The play is, in fact, a creative oral evaluation about the studied content (NAVE, 2018).

The planning abilities are stimulated by the "Planning together is necessary" activity, which aims to involve students into the organization of a training cycle, opening space for them to collaborate with the planning of strategies and pedagogical activities of the classes of a two-month period, including contents that are of their interest. It transforms the classroom into a collaborative learning environment. The teacher must make a prior planning of the formative cycle, evaluating which contents he/she considers to be priorities and what needs to be addressed according to the curriculum in that discipline. The teacher should also organize the strategies, specially how the contents can be addressed and distributed in each class. A spreadsheet can be used to organize this planning. For each class, the following data were defined: date, content, strategies / resources, skills and abilities.In "Author track" activity, students can develop a projectfrom four categories: audio-visual, games, application and editorial. Students organize individual study paths throughout the process and can use the curriculum'sdisciplines. This is an activity that needs the support from the school management, because it is necessary to articulate the time of different teachers and disciplines.This project is part of the so-called Integrated Workshop, which brings together all the elements of the technical education, with the focus onscreenplay, multimedia and programming. The students receive the proposal to develop an author project, within four possible categories: audio-visual, games, application and editorial

process. They choose the category of the project they wish to develop, being able to work in groups or individually. The strategy of engagement in this proposal lies in the flexible management of time: the student can dedicate his/her time of a certain discipline of technical education to the production and development of his/her author project (NAVE, 2018).

IV. CONCLUSION

The promotion of education for creative economy in Brazil is connected to the necessity to incorporate contents linked to creative competencies into current educational programs, as well as the encouragement of the interaction between technical schools and social initiatives and the development of research centers in creative economy (Jesus & Kamlot, 2017).However, the constructive relations between the public sector, companies and education institutions – which created the basis for the success of the NAVE project in Rio de Janeiro – sometimes cannot be replicated for other parts of the country in the light of paternalist schemes, the discontinuity in public policies related to culture and education and the lack of interest by many businessmen. In the light of the possibilities of non-consolidation of these partnerships, there is still a way to promote creative activities with low-cost and no-cost initiatives which can still bring the technical / scientific, cultural / creative and business pillars of creative economy together. These initiatives can be built on the local potential of each community, with the creation of spaces of public discussions and art exhibitions, the development of interconnected activities among disciplines, the use of case studies applied to a simulated market or a social issue to be solved by students and the stimulus to local cultural expressions (Reis, 2008).

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