

# Pedagogical Innovation: Towards Conservation Psychology and Sustainability

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**Abstract** Pedagogical innovation is one of the solutions to the challenges facing the educational system; it is a mediator for change and adaptation. The objective of education is to go more than rationality and involve creativity; the development of creativity is increasingly considered in the teaching-learning processes. The objective of the research was to compare the perception of university students about theater as a pedagogical tool with the scientific evidence and its contribution to the conservation of natural resources, at the Universidad Estatal Amazónica (Ecuadorian Amazon Region); four plays were performed during the academic periods: 1) 2018 – 2019, 2) 2019 – 2019 y 3) 2019 – 2020. Four didactic phases were developed in each period; a survey with four closed questions based on the Likert scale was applied to 247 students. It was evident that more than 50% and 31% students totally agree that theater is a new pedagogical tool and can be used as a learning mechanism, respectively; the 7% of students on average consider that theater is probably related to conservation psychology, despite the fact that there is evidence of its potential for forest care and management. The 62% totally agree that the theater promotes the sustainability of natural resources. Therefore, theater is considered to be effective in raising awareness and educating on natural resource issues and breaking down misconceptions about their conservation.

**Keywords** Amazonia, Pedagogical Tool, Sustainability, Teaching, Theater

## 1. Introduction

Pedagogy describes the philosophical and empirical traditions that address how young people learn and how the teacher / instructor approaches the learning environment. From a pedagogical perspective, students: (1) depend on teachers' instructions, (2) have little experience with course content, (3) need to be directed towards what and when to learn, (4) focus on the subject at hand, and (5) are motivated to learn by external forces [1]. It is considered that the science is in charge of education as a human phenomenon, it is permanent discussion in search of qualifying the pedagogical act of the classrooms to contribute more effectively to the training of present and future generations, and thus build the communities of knowledge and lifelong learning for a globalized society [2].

In the complex sociopolitical-economic academic context of Ecuador, pedagogical innovation is one of the solutions to the challenges facing the educational system. It

is a mediator for change and adaptation, marked more by human interaction than by technique, supporting students and facilitating learning and teaching [3]. There are different definitions for the concept of pedagogical innovation. Initially, pedagogical innovation is described as: (1) an intentional improvement, measurable and sustainable that is unlikely to occur frequently [4], (2) represents a logical notion defined as "an intentional action that aims to introduce something original into a context, and that seeks to improve student learning in a situation of interaction and interactivity [5], (3) often described as anything but a master class, method still used by most teachers [6].

Pedagogical innovation involves guaranteeing and implementing the acceptance and widespread use of a change that survives without altering its initial characteristics. This is classified into 11 types in higher education: (1) computer use, (2) personal communication and problem solving skills, (3) team projects and collaborative-cooperative learning, (4) oral presentations of the students (individual and group), (5) interactive lectures and tutorials, (6) work-based learning, (7) problem-based learning, (8) resource-based learning, (9) open and distance learning, (10) peer tutoring or assessment, and (11) others (student-led learning, log books, portfolios, reflective practices) [7].

The forms of thought promoted in the arts can be useful, when the objective of education is to go beyond rationality and involve creativity [8], the development of creativity is increasingly seen as an educational imperative. Two forces drive a greater emphasis on creativity, individual student achievement, and future success as participants in the knowledge-based economy [9]. However, current educational strategies are limited to teaching rigid models that do not encourage creativity and encourage the acquisition of knowledge about creative exploration; teaching / learning processes are based on repetition and memorization. Theater is a highly interactive activity that rewards the development of skills such as active listening, acceptance, non-verbal communication, interpersonal trust and support among students [10], and it allows a permanent and functional learning process [11].

There are two arguments to justify theater as an innovation in teaching-learning processes: (1) the contextualist approach, uses art as a means to achieve a particular objective, such as: helping to learn history or stimulating creativity, through complex creative thinking [8] and (2) the essentialist approach, conceives art as a very particular and valuable experience in the Deweyan sense [12], that it has a particular continuity for each individual, activates the sensitivity of the observer and promotes the expression of its values. The objective of the research was to compare the perception of university students about theater as a pedagogical tool with scientific evidence and its contribution to the conservation of natural resources.

## 2. Methodology

### 2.1. Phase of the Didactic Process

As a pedagogical innovation methodology and training activity in the Sustainable Development course of the Environmental Engineering Degree at the Universidad Estatal Amazónica, located in the Ecuadorian Amazon Region (EAR), four theater plays were held during academic periods: 1) 2018 – 2019, 2) 2019 – 2019 y 3) 2019 – 2020, in each academic period, four didactic phases were developed:

Phase 1. Induction on the importance of theater and its relationship with the conservation of natural resources

The students developed cognitive skills were developed with social intervention methodologies, they acquired theoretical knowledge that favors the understanding of this technique and its development. For each academic period, a two-hour training talk was held, the topics covered were: integration of the arts in educational systems [13], the relationship of creativity with theater [14], theater as a tool in public health systems [15], as an innovative method to support the management and conservation of natural resources [16], and for rural transformation [17].

Phase 2. Configuration of theater groups and production of the theater play

Theater groups were set up based on the number of students per academic period: 1) 2018 – 2019, 2) 2019 – 2019 y 3) 2019 – 2020, number of students: 115, 67 y 65, respectively. For the production of theater plays two tasks were developed: 1) creation of the theater play and 2) essays. For the creation of the theater play the guidelines were: a) Distribution of functions: researchers, actresses / actors, director, screenwriters, props and scenery, reportage and photography, each student could take on more than one role; b) Research process: the students with the functions of researchers investigate the rural dynamics of the places where the theater plays will be presented; c) Selection of themes to present and creation of the theater play: With the identified rural dynamics, a merger with the Sustainable Development Goals (SDGs) was carried out for each theater play, with a duration of between 60 and 70 minutes.; d) Essays: it is a process of construction and reflection of the theater play created and identification of problems and timely solutions.

Phase 3. Presentation of the theater plays

The four theatrical presentations were made in the city of Puyo (Ecuador), an inference was made for their potential application in the main areas of natural and cultural importance located in the central and northern areas of the EAR: Cuyabeno Wildlife Production Reserve (CWPR), Yasuní Biosphere Reserve (YBR), Sumaco Biosphere Reserve (SBR) y LLanganates Sangay Ecological Corridor (LLSEC) (Fig. 1).

In the three theater plays 247 students participated, with an average age of 23 years. In the Table 1 shows the

academic periods, protected areas, titles of theater plays and distribution of students according to protected areas.

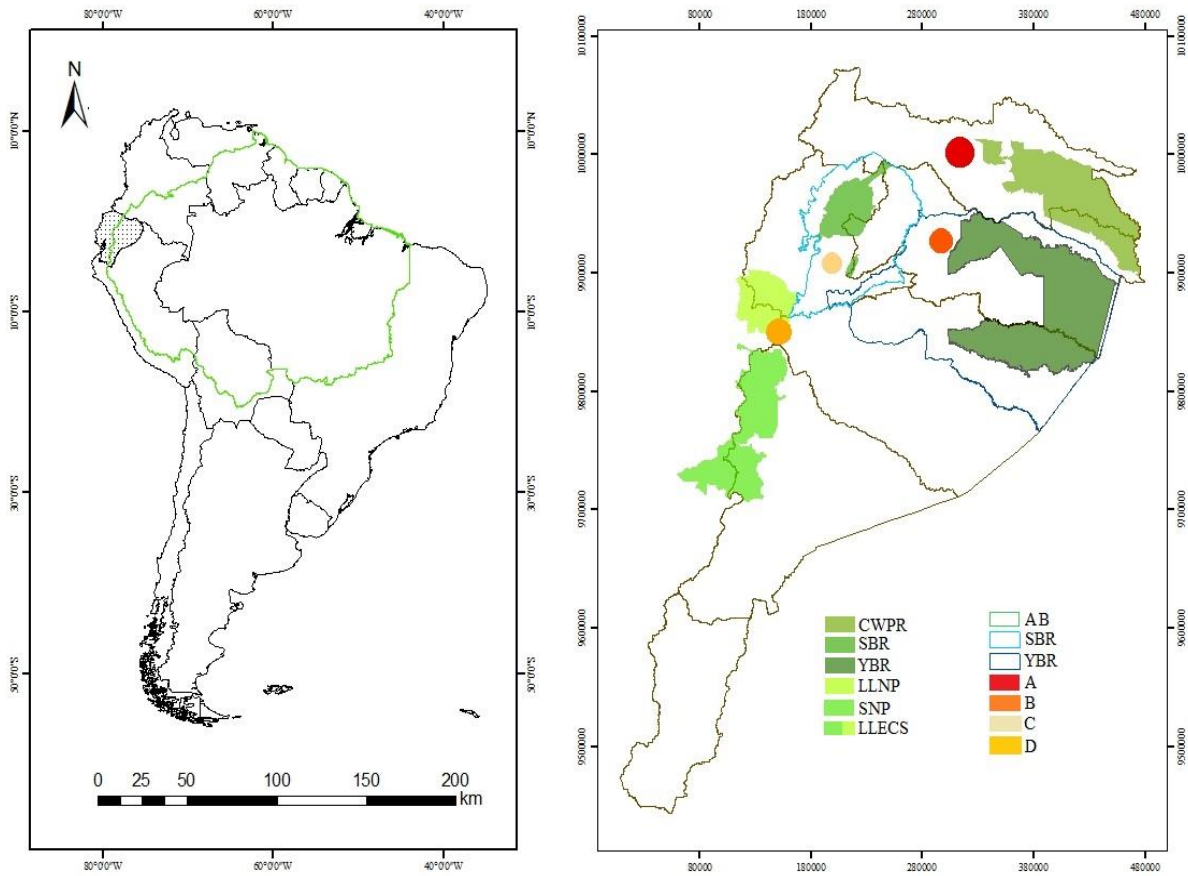


Figure 1. Places of presentation of the theater plays in the Ecuadorian Amazon Region

Table 1. Distribution of theater plays according to academic periods and area of protection of natural resources.

Academic period	Protected area / Denomination for the protection of natural resources	Title of the theater play	Number of students	Code by theater play
2019 – 2020	Yasun iBiosphere Reserve (YBR)	Sustainable cities and communities	65	A
2019 – 2019	Cuyabeno Wildlife Production Reserve (CWPR)	A trip to my planet	67	B
2018 – 2019	Sumaco Biosphere Reserve (SBR)	An emergency patient	52	C
	LLanganates Sangay Ecological Corridor (LLEC)		63	D



**Figure 2.** Sustainable cities and communities for the YBR



**Figure 3.** A trip to my planet for the CWPR



**Figure 4.** An emergency patient for the LLSEC



**Figure 5.** An emergency patient for the SBR

#### Phase 4. Evaluation of the experience

After the theater plays, two dimensions were evaluated: theater 1) as an innovative pedagogical tool and learning mechanism and 2) its relationship with the psychology of conservation and sustainability of natural resources. A survey with four closed questions based on the Likert scale with five response options was applied: 1) totally agree, 2) mostly agree, 3) probably, 4) mostly disagree, 5) totally disagree; to the 247 participating students

### 3. Results and Discussion

#### 3.1. Theater as a Pedagogical Tool is a New Idea

In the four theatrical performances, more than 50% of the students totally agree and the average 31% mostly agree (Fig. 6), that the theater is a new pedagogical tool, but the literature indicates that it has been used as a teaching resource in different times and situations, began with the theatrical dialogues created by the humanist Juan Luis Vives for teaching Latin to university students during the Renaissance (XV - XVI century) [18], it had a didactic function in the Jesuit and Salesian schools (XVI century) where it was integrated into teaching activities in all disciplines and school training [19].

The theater has generated various potentials, such as: integration into a process of curricular connections and collaborative commitments. [20], It has been demonstrated in different pedagogical settings: theater has a long tradition in education, in 1980, Charles William Eliot, president of Harvard, argued that theater develops a sense of right, duty, and honor, along with the necessary communication skills in the business areas [21].

The result of a meta-analysis developed over a period of 20 years (1993 - 2013), on the arts used as a teaching and research instrument, the theater was the most common performing art used [22]. At the University of Carolina at Berkeley College of Arts and Sciences in 2016, 2017, and 2018 with students (151) from different majors: computer science, engineering, economics, architecture, sociology, environmental studies, chemical and biological sciences, the “collaborative innovation” class was created for the integration of art, business and theater, the result was that collaborative teamwork, helps tackle social problems, and opens up unexpectedly challenging potential for the development of students as future contributors to society [23].

The 8% of the students participating in the four theater plays consider that the theater is probably a new tool in pedagogy, while literature mentions that in Finland the integration of theater and other performing arts such as dance, music, cinema, occurs at scale throughout the national educational system with the active participation of students and teachers more than a decade ago [24], and 3% and 4% of the students who performed the plays for

theCWPR and LLSEC, respectively, this mostly disagree and only 2% and 3% totally disagree; showing that only nine students have some kind of knowledge about the performing arts and its history in the teaching learning processes; evidencing a scarce formal, informal and non-formal education in this area of knowledge.

**3.2. Theater Can be Used as a Learning Mechanism**

In question # 2, of the participating students, 49% who presented the theater plays for the SBR and YBR, and 8% for LLECS (much less than in other places), are totally agree (Fig. 7); which corroborates that the theater offers new opportunities for students to apply skills they have learned from other disciplines such as: history, science and

human nature, etc. [25], develops various skills such as empathy as: clinical empathy, a critical skill for the doctor-patient relationship [26], favors the growth of society and incorporates tools such as: 1) understand human experiences of the past and present, 2) learn to adapt and respect different ways of thinking, working and expressing; it generates an institutional transformation, towards a work environment, with better interpersonal relationships and to increase the capacity of strategic alliances between institutions, which implies a change in management policies, such as: improving benefits for the most vulnerable groups [27] and in the audience it generates a change of thought on a particular topic and gives them new ideas.

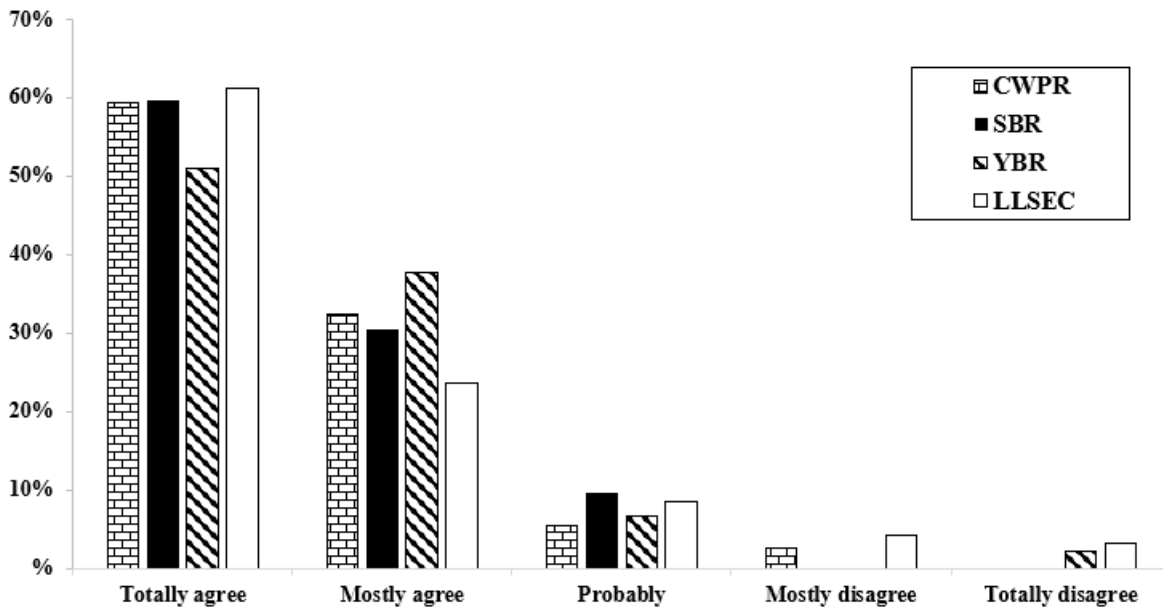


Figure 6. Histogram with the results based on question # 1 of the survey: the theater as a pedagogical tool is a new idea.

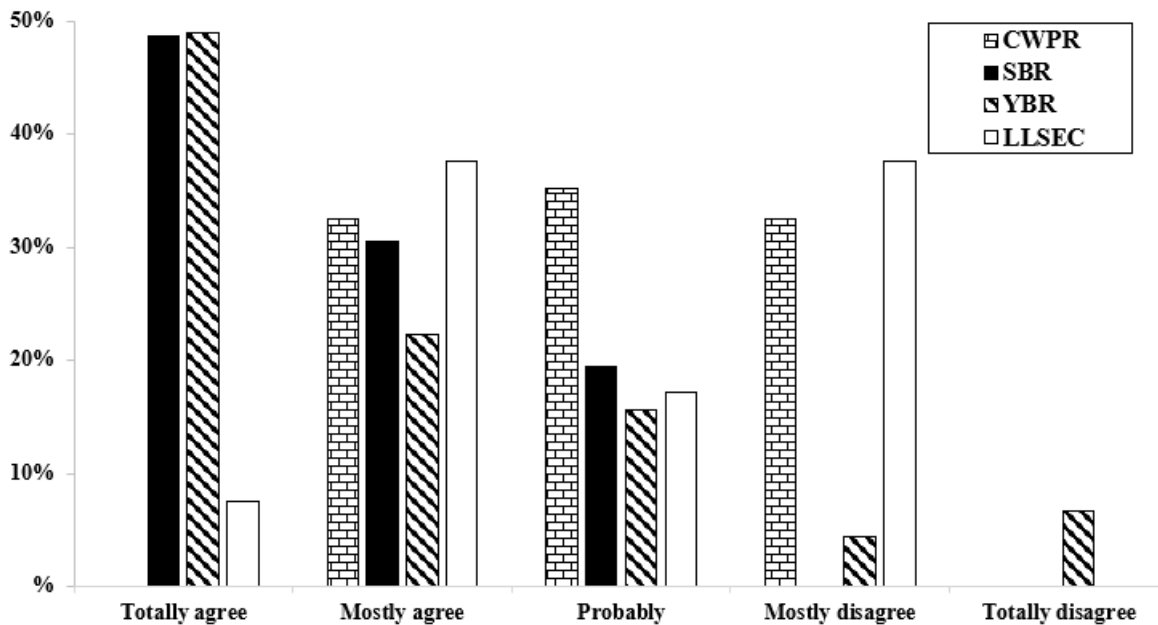


Figure 7. Histogram with the results based on question # 2 of the survey: theater can be used as a learning mechanism

The students who presented the plays for: CWPR, SBR, YBR and LLSEC, totally agree with 32%, 31%, 22% and 38%, respectively, that theater alphabetization prepares students to work collaboratively, participate in social networks, negotiate cultural differences, criticize existing paradigms, navigate contradictory data [28], enhances spatial thinking, abstract reasoning, and active listening and observation skills [29].

Based on the learning theory, constructivism is the theory of teaching and learning, it states that knowledge cannot be transmitted from a teacher to a student but must be built by each student through the interpretation and reinterpretation of a constant flow of information [30], analogous process the problem-based learning (PBL) educational method [31].

Starting in the 1990s, there is an interest in art-based research (ABR), first used in 1993 by the erudite Elliot Eisner [32] and implemented in various pedagogical settings such as the University of Arkansas in the history course, where the positive effects of theater as a pedagogical tool were demonstrated [33] and the research line has been formulated in: Proposals for the development and implementation of theatrical education at different educational levels and stages, from early childhood education to professional training, precisely establishing the subjects that can be articulated as a line of investigation [34].

The education is considered as the way for the integral formation of the human being, its objective should not be limited only to the well-being and responsibility of life, but also to the development of qualities and talents characteristic of each individual; of the students, 22% considered that the theater can probably be used as a learning mechanism. It is emphasized that education allows us to understand world views, ways of seeing and explaining reality from where new and fun ways of developing act [35], and what better way to preserve the human being in front of the world, if not through the theater, an educational resource through which children with special educational needs can create games, comply with rules, build their spaces and their stories [36].

Although the usefulness of theater in pedagogy is evident [37, 38], the 32%, 4% and 38% who performed the plays for the CWPR, YBR, LLSEC, respectively; they consider that this is most likely not the case, and 7% of students (SBR) totally disagree with the use of the theater. The lowest values are considered to be related to the participants' precarious level of knowledge about the importance of theater in teaching-learning processes.

### 3.3. The Relationship between the Theater with Conservation Psychology

Question #3, is related to conservation psychology (CP) which is a part of psychology, studies the behavioral causes and solutions of environmental problems, aims to understand and promote human and nature care [39]. The CP investigates the interactions between human behavior and the socio-physical environment [40], recognizes and accepts the concept of sustainability [41], which is described in the Brundtland Report and highlights the importance of studying sustainability issues from a psychological perspective, therefore the CP is directed to study the psychological components involved in sustainable actions called as psychological dimensions of sustainability [42] that involve psychological tendencies and capacities (attitudes, motives, beliefs, norms, pro-environmental abilities, etc.) that influence sustainable behavior (proecological, altruistic, frugal and equitable actions) [43]. In terms of experimental psychology, it was discovered that the incorporation of gestures when learning a new concept increases the retention of knowledge of the students [45]. A theatrical experience in the community of Cherán (Mexico) explored the positive potential of theater in conservation psychology, for community forest care and management. [16].

In the same way, on average 62% and 25% of the students in the four scenarios totally agree and mostly agree, respectively, that the theater is related to conservation psychology as: instrument of behavior change and way of thinking (Fig. 8): Theater helps to break the invisible, often abstract concept with something real and present, especially when it is performed with the language that people know [44].

The 7% of students on average consider that theater is probably related to conservation psychology; when the theater provides a space and time for connection and human consciousness instead of cultural exclusion and marginalization [46], it is also considered as a tool for development (Theater for Development - TFD), it is alid of the environmental sociology, since it deals with a connection at the community level, not only at the level of individual behavior or attitudes; in Brazil, in the state of Paraíba, it was used as a tool that promotes or advocates for problems in communities to raise awareness about the proper use of resources and promote food security and sovereignty [47]. In this year in Ecuador, the theater play Nahuel and the bear of Antejos premiered; that seeks to make people aware of the excessive consumption of plastic, the over-exploration of natural resources and the invasion of humanity, criticizes polluting industries [48].

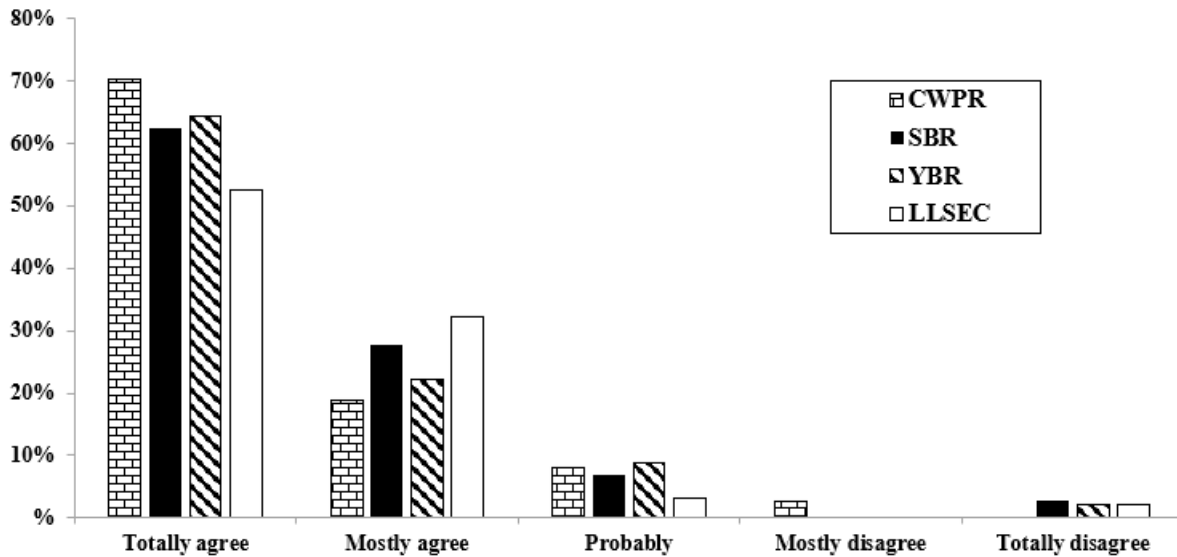


Figure 8. Histogram Question # 3 of the survey, which deals with the relationship between theater with conservation psychology.

### 3.4. The Theater is a Tool to Promote the Sustainability of Natural Resources

The concept of sustainability arises in forestry, where its meaning is never to harvest more than what the forest produces in new growth [49] the word Nachhaltigkeit (German term for sustainability) was first used with this meaning in 1713 [50]. The 62% of the participating students are totally agree, that the theater encourages the sustainability of natural resources (Fig. 9); theater is effective in raising awareness and educating rural people about natural resource issues and breaking down misconceptions about their conservation as: forest burning, removal of nitrogen-fixing trees; the theater is a sustainable alternative tool to communicate the importance of the sustainability of natural resources in rural areas, in 2016, this was demonstrated in Gaga, which is a rural settlement located in the local municipality Raymond Mhlaba of the Eastern Cape Province, South Africa [51].

To date, efforts to educate the public and raise awareness about the conservation of natural resources depend on conventional social campaigns [52]. The use of the mass media may be ideal to reach varied and extended audiences, but it has been shown that its consumption generates a discard or the information is ignored [53]. The 25% of the participants mostly agree with question # 4, agreeing that theater is effective in communicating sensitive issues, stimulates community action, gives voice to the voiceless and can be a sustainable tool for sensitivity and mobilization in rural sectors [54]. It allows rural sectors to participate in all its stages of the production of the work, from the collection of information, the development of the story, to the rehearsal and the actual performance [55].

In question 4, on average, 7% of students consider that probability theater is a tool to promote the sustainability of

natural resources, showing that there are doubts among students about the potential of theater, when it is a platform powerful to mobilize people to the environmental conservation; Turning conservation issues into theatrical performances is a real way of making issues resonate among rural dwellers [56], making a play at the rural level is cheap, flexible, and more current than other media, it doesn't depend of the literacy, and it is a true two-way media because the public can also participate in the theater [57]. The active participation of communities is essential to generate and promote the management of natural resources and their sustainability [16].

In many developing countries, theater has proven to be an effective strategy to raise awareness, mobilize and influence change of attitude towards environmental problems. In Papua New Guinea, theater was used to bring about a change in the community's attitude towards logging [58]. Similar conservation behavior was achieved in the Korup and Banyang-Mbo area of Cameroon, where the use of the theater not only helped discourage the use of dynamites and chemicals to kill fish and hunt down foreign forest hunters, but also offered marginal men and women the platform to be heard without charges [54].

An awareness and education program increases knowledge on the subject and facilitates change of attitude [59], the knowledge has been shown to be generally assumed to be an essential prerequisite for an individual's behavior [60], that behaving responsibly towards the environment is closely related to an individual's level of consciousness about environmental problems [61]. Theater manages to mentally engage communities [54] and connect them emotionally with their socio-ecological systems [16]. Theater was shown to help deepen understanding of the various concepts surrounding the conservation of natural resources [62].

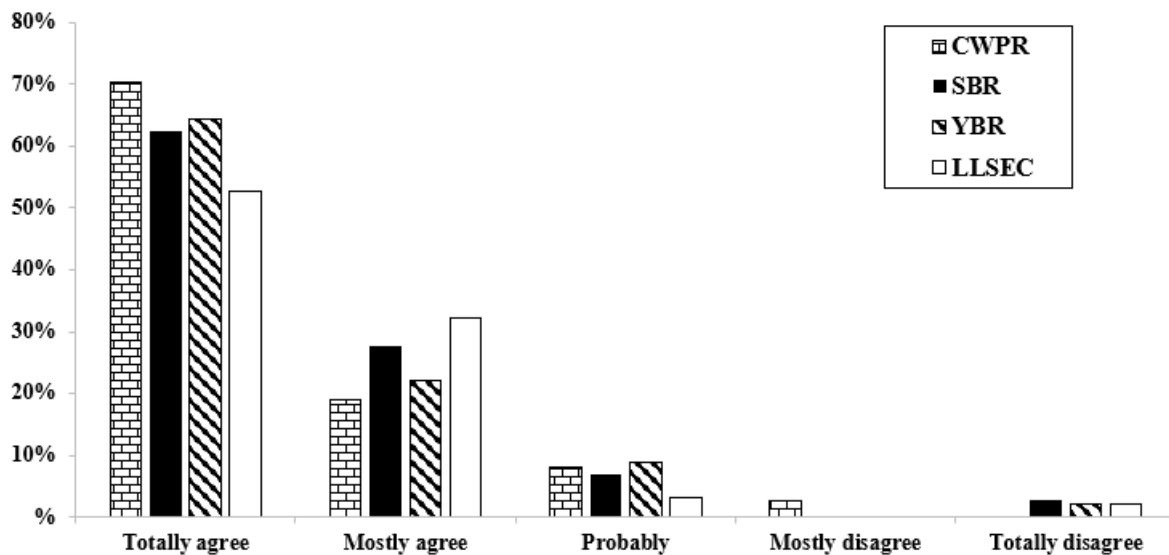


Figure 9. Histogram with the results based on question # 4 of the survey, that if the theater is a tool to promote the sustainability of natural resources.

## 4. Conclusion and Implications

Theater as a pedagogical innovation in the university educational system of the Ecuadorian Amazon Region, allows the efficient training of professionals, is a tool to enhance the performance of students, their previous experience, the resulting experience and their position within the university.

Theater has the potential to fill knowledge gaps, remove entrenched beliefs, understanding of different disciplines, and leads to a change of opinion or attitude about the conservation of natural resources. The implementation of theater play as a didactic tool, can be considered a privileged way to spread proposals for the conservation of natural resources, in sectors where the media are not well developed; in this context the theater uses a language that people can understand, act in distant places and communicate with audiences with a low level of education.

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