

W-STEM: Building the future of Latin America: engaging women into STEM

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UNINORTE

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Introduction

The first round of benchmarking of strategies and mechanisms of the W-STEM project [1-16] took place last Thursday, November 28, 2019, at the facilities of the Universidad del Norte (Barranquilla, Colombia) during the W-STEM INTERNATIONAL LEADERSHIP SUMMER CAMP.

This was the first of three rounds of benchmarking; a second round will take place during the second meeting of the consortium in Mexico, after the attraction campaigns and a third one during the final meeting in Chile, with the presentation of the results. The objective of these is to identify policies, procedures and mechanisms that are considered good practices in attracting, accessing and guiding women in STEM undergraduate programs so that other institutions can replicate them. Similarly, it was hoped that the practices presented would serve as inspiration for the development of the institutions' plan of action.

Methodology / Preparation

UNINORTE as a partner in charge of the organisation of the first round of benchmarking prepared a questionnaire for the collection of good practices in the areas of access, attraction, retention, or orientation of women in STEM careers in the universities belonging to the consortium (annex 1). The methodology used was inspired by the one used by Columbus for its benchmarking rounds, which has been successfully used by the partnership since 2009. This exercise has allowed the participating institutions of the benchmarking clubs organised by them to identify their strengths and weaknesses in comparison with other universities, laying the foundations for improvement and collaboration between institutions.

When designing the questionnaire, the one used by Columbus Association and the University of the North for the U-Benchmarking Club carried out between 2017 and 2018 was taken as a reference. This questionnaire contemplated more axes than the round to be carried out for the W-STEM project, so the questions had to be slightly modified and some eliminated with the aim of adjusting it as much as possible to the context of the project and the round as such. The three axes that were maintained were: attracting women to STEM programs, recruiting, and accessing women to STEM programs, and retaining and empowering talent during STEM training. The partners were asked to present not only their success stories but any experiences from which it was possible to learn and create collaborative learning networks.

The form consists of four sections: description of good practice, institutional strategies and policies, implementation, and sustainability, and finally, future improvements. The first section sought to know the type of practice being discussed and the objectives that were expected to be achieved; the second section sought to know if the practice was the result of an institutional policy or strategy, if so how it contributed to the achievement of those goals and finally what resources were available; the third section sought to know how the success of the practice was measured as well as the results obtained in terms of learning and improvement; finally, it wanted to know how the practice is viewed in the future and what actions are planned to overcome possible obstacles.

This questionnaire as well as the completed UNINORTE good practice document were handed over to the consortium in the sixth week before the W-STEM INTERNATIONAL LEADERSHIP SUMMER CAMP for completion and delivery. During the following weeks the members of the UNINORTE team were monitoring the partners to offer advice if needed.

The initial expected date for delivery was November 3, 2019, intending to have enough time to carefully review the material delivered by the institutions and choose those most structured for presentation to the leaders during the Cartagena block of the W-STEM INTERNATIONAL LEADERSHIP SUMMER CAMP. The other practices were exposed during the benchmarking round. However, when the deadline arrived, the "partners" requested more time so this was extended until they could collect as many practices as possible. Two weeks before the Summer Camps, three practices were chosen from those that had been submitted so far.

Simultaneously, the mapping of internal processes began to be collected. To integrate the processes, it was suggested that the partners look for good practice among the mapped processes and, based on the information provided, complete the benchmarking questionnaire.

Three practices were chosen for presentation during the Cartagena block of the W-STEM INTERNATIONAL LEADERSHIP SUMMER CAMP (University of Oulu, Politecnico di Torino and Northern Regional College). The aim was to take advantage of the presence of institutional leaders from the universities of the consortium, which is why they did not take part in the benchmarking round and are not included in this report. The remaining nine practices were presented during the Barranquilla block and had twenty minutes and then ten minutes for questions from the audience; three universities decided not to submit a good practice because they had not found one in their respective institutions.

Summary of the first benchmarking round

Universidad del Norte: Student group W-STEM (annex 2)

The W-STEM UNINORTE Student Group is a student community founded in the summer of 2019 as a mechanism to attract and retain young women in STEM camps. The main objectives of this group are:

1. Create a physical channel of dissemination for the W-STEM project
2. Attracting young women to STEM careers
3. Provide relevant information on STEM careers to young women in secondary schools
4. To raise community awareness about the importance of gender equity in STEM fields.

Activities of interest to the group will include high school attraction campaigns; robotics, programming, and data analysis seedbeds for college and high school students; local/national/international role model conferences; college and school student mentoring programs with former students and teachers; and activities where college students can share their experiences as STEM students with high school girls.

Technological University Dublin: INGENICS (annex 3)

TU Dublin presents INGENICS, a national platform, as a way to recruit students and female staff to retain them in their careers.

With the help of INGENICS and the government a platform was created to achieve a critical mass at the national level; to explain the objectives of the efforts and identity for gender balance and gender equality in ICT careers by influencing government policies.

Universidad de Guadalajara: attracting women to STEM careers (annex 4)

They have implemented strategies such as Expo professions, high school visits, science fairs and technology girls to motivate and promote the exact sciences and engineering.

The main result achieved with these strategies is a gradual increase of girls in STEM careers over the years using indicators such as demand, income, and end-of-career statistics.

Universidad Tecnológica de Bolívar: babysitting service (annex 5)

Strategy created for students and employees who have children and do not have a caregiver. Starting in 2012, the service is available for children from 18 months to 5 years old. It is free for students and employees. Teachers and psychologists were hired to care for the children on university premises, all because parenthood is a common cause of dropouts from schools and universities.

Other strategies applied at UTB are the programs "UTB Women in Science", "Programming for Girls", "Citizen Science for Girls".

Universidad de Costa Rica: women in engineering project (annex 6)

Program to attract female students to the areas of engineering, directed by five female professors of the engineering faculty. The program is applied to elementary school students to raise awareness and eliminate stereotypes from an early age, in high school to keep them informed of the areas of engineering so that they can choose a career with criteria.

With activities such as the "Coffee with Women Engineers", UCR tries to raise awareness in society about women in engineering.

Universidad técnica particular de Loja: mentorships (annex 7)

This program accompanies new students in civil engineering, geology and mining. The project was developed by 7 engineering professors and 2 career directors.

The new students felt fearless and supported. The project allows retaining the new students in engineering. Using lectures such as "Women and Engineering" and a creative robotics project that was applied to the children, UTPL tries to increase the income of the students.

Universidad Técnica del Norte: FICA STEM (annex 8)

This program addresses the attraction and retention of women in STEM. The idea is to support female students who are already studying career and to attract women to different careers. One of the barriers encountered is that the university cannot directly control the strategies for attracting women to enrol in STEM careers.

Universidad de Salamanca: Scientific Culture and Innovation Unit (UCC+i) (annex 9)

The UCC+i carries out an annual program of events and programs to integrate women into STEM specialities. It has a low budget for each academic year, but in addition, the university provides reserve spaces, commitment from event participants, contact with external stakeholders and search for speakers. By opening it up to the entire community (both adults and youth), they are seeking sustainability. In the framework of the project, they use the spaces to gain recognition by doing activities such as: "girls and women in science" which provides spaces for quick appointments with researchers, talks in schools, breakfasts with a teacher; also "scientific spring" which is held during May. With these events, support is shown within the unit.

Instituto tecnológico de Costa Rica: mechanisms and policies (annex 10)

Each major at this university is a STEM program. The student body has an average of 66% men and 34% women, the professors 68% men and 32% women. Two general practices apply throughout the university, and a specific one that applies to the school of computer engineering.

- Inter-institutional Commission, to help attract and retain women in engineering. This commission aims to increase enrolment, retention (a space free of violence through the creation of a gender equity office, academic support, tutoring) and also the labour insertion of women in the ITCR. Informative and motivational communication actions are carried out (such as printed and audio-visual material), to increase women's participation in STEM careers and also by researching strategies to improve women's enrolment in core programmes.
- Affirmative actions for parents and students.
- Inter-departmental committees
- Scholarships.
- Nursery rooms.
- Parents' association.
- Institutionalised policies.

Conclusions

The first round of benchmarking of the W-STEM Project aimed to know the good practices of the universities belonging to the consortium in the areas of access, attraction, retention, or guidance of women in their STEM careers. It was held on Thursday, November 28, 2019, at the Universidad del Norte (Barranquilla, Colombia). A total of nine universities (seven Latin and two European) presented their good practices during this session. In contrast, three others (all European) presented them during the Cartagena block as a presentation for university leaders, so they did not take part in the benchmarking round. Three universities (all Latin) expressed no good practices in these areas, so they preferred not to present.

From what was presented by the European universities, it is identified that, although the statistics do not differ much in comparison to Latin American universities, there are significant advances concerning the previously mentioned areas. There are even government policies that support these initiatives and actions, which take a much longer path than the Latin universities.

On the other hand, strength in terms of university initiatives is detected in Latin American universities. However, there is the disadvantage that, for the most part, they are isolated and located in the universities rather than in the city, country, or region. As a positive aspect, it is possible to highlight that most of these actions can be replicated in different contexts, if there is institutional support. It is therefore important to obtain the support and commitment of institutional leaders, so that by being strategic allies, they allow the implementation of more initiatives, as well as providing them with the necessary economic support. This can be achieved by raising awareness about the problems and the benefits that an increase in the population of women in STEM areas can bring to the institution, the city, the region, and the country. For economic support, it is also possible to resort to the search for strategic business allies.

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Annexes

W-STEM International Leadership Summit
Good practices: strategies and mechanisms
First benchmarking round, Barranquilla, November 28th, 2019

Completion instructions

Note: Please complete and send this questionnaire to w-stem@uninorte.edu.co before November 3rd.

All questions in this questionnaire are based on the Columbus methodology for benchmarking rounds. Before filling it please be sure to read these instructions. They will allow you to better understand the dynamic we aim to promote, the way the questionnaire will be used, and therefore, the nature of the answers we require.

To answer the questionnaire, please be sure you've explored all the initiatives/practices/activities with the person in charge of every subject before choosing those which have a bigger impact on your institution.

Before you proceed to answer please take into account that:

1. This benchmarking (BM) is looking for those cases that have the biggest potential for collaborative learning, not only the successful ones. *Projects at any stage (planning/execution/evaluation) as well as programs and services in creation, development or closing phases are equally interesting, as long as they offer an experience from which people can learn.*
2. This questionnaire will be taken as a reference in order to identify the practices that will be presented during the summit. Make sure to condense the most relevant information.
3. Before answering ask yourself: *could this information be utilized and be beneficial to other partner universities? Could this project/program/service improve or enrich itself with the experience of other partner universities?*
4. Take into account that the subject comprises **3 subthemes**. We invite you to choose those **valuable** experiences to share with your partners. By answering this questionnaire, have in mind that this **is not an evaluation of your institution**: we aim to share the achievements but also the problems and solutions, whether they are successful or not, that we have found. From mistakes, we can learn as much as from success.
5. The purpose of this benchmarking is to learn from the experience of other partner institutions. Therefore, please respond to the questions having in mind that the answers must describe **what was learned and what is appropriate** in your institution

when it comes to policies and strategies to promote the participation of women in STEM careers and their success in their professional lives. ***Respond only to the subthemes in which you have developed projects/programs/services.***

6. When it comes to choosing a case, prefer those of ***greater reach or coverage***, according to the subthemes instead of isolated services and experiences. Attach data that may serve as reference or record in order to know and understand (as appropriate) the processes of decision, planning, execution or evaluation of your projects. Focus on responding to questions such as: ***how we decided to do it? How we did it/are doing it? How did we overcome or solve the critical points? How do we evaluate the results/achievements? What did we learn from what we did?*** Give examples when needed.
7. Do not forget to answer the last question: ***do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?***

Axes to address in the benchmarking

1. The attraction of women to STEM programs All the policies, strategies, mechanisms and activities that allow disseminating information about STEM disciplines, their application in social, environmental and sanitary problems, among others, as well as the promotion of the opportunities inside the HEI and for aspiring students of the HEI and also for elementary and high school students. For example joint work with externals (schools, organizations, etc.), articulation with key actors inside the STEM programs, sensibilization practices of science and tech with young girls, among others.

2. Recruitment and access of women to STEM programs All the policies, strategies, mechanisms and activities that allow to: improve the access of women to STEM programs, evaluate the necessary skills of aspiring students to assume the enrollment in a higher education STEM program, achieve an adequate academic performance of women in STEM programs so they can successfully conclude the career. For example: what kind of information is selected? Which variables and instruments are used in the student selection process? What type of tests are being applied? General or specialized tests? Are the secondary school's grades taken into account? How does your institution determine the required level of performance to be admitted? Additionally which support mechanisms such as scholarships or financial resources are prioritizing the access of girls and women in STEM programs.

3. Retention and talent empowerment during STEM training: science and technology teaching All the policies, strategies, mechanisms and activities oriented to empower the talent of women studying STEM programs so they can successfully develop during their university stage and will allow identifying strengths and weaknesses to take into account in processes such as induction, leveling, and curricular development. For example, learning and training programs oriented to achieve academic success, mentoring programs, entailment and participation in collaborative networks, mechanisms to achieve their entailment to teaching and investigation, among others.

GENERAL INFORMATION

Partner	
Partner	
Leader of the BM team	
Contact e-mail	

I. Description of the practices and the relation to the BM axes.

1. Select the axes in which the good practice that your institution is carrying out is described.

Please consider those practices of higher added value and impact in your institution, according to the content description of each axis. We kindly ask you to focus on **one good practice**, although it is possible that some practices could have an impact on more than one axis at a time.

1 The attraction of women to STEM programs	
2. Recruitment and access of women to STEM programs	
3. Retention and talent empowerment during STEM training: science and technology teaching	

2. Describe the good practice and how does it impact the axes you have selected in your institution.

3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	
Development / Application / Execution	
Tracking / Control / Evaluation	
Other:	

4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

how will this practice improve (or will improve) the participation of women in STEM programs

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	
0512	Biochemistry	
0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	
0532	Earth sciences	
0533	Physics	
0541	Mathematics	
0542	Statistics	
0611	Computer use	
0612	Database and network design and administration	
0613	Software and applications development and analysis	

0711	Chemical engineering and processes	
0712	Environmental protection technology	
0713	Electricity and energy	
0714	Electronics and automation	
0715	Mechanics and metal trades	
0716	Motor vehicles, ships and, aircraft	
0721	Food processing	
0722	Materials (glass, paper, plastic and, wood)	
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	
0732	Building and civil engineering	



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II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes		No	
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6.2. If your last answer was yes, how is this Good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?

8. Which resources and support have the institution destined to develop the practice/action/strategy?

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

10.1. How were/are being/will be measured the indicators listed above?

10.2. Which systems or mechanisms are being used to monitor the achieved results?

10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

12.2. Which was the hardest barrier to overcome? Mention it.

12.3. Which was the facilitator? Mention it.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

13.2. Please attach, if you have any, the most recent results.



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IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?

W-STEM International Leadership Summit
Good practices: strategies and mechanisms
First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Universidad del Norte
Country	Colombia
Leader of the BM team	Amparo Camacho-Díaz
Contact e-mail	w-stem@uninorte.edu.co

I. Description of the practices and the relation to the BM axes.**1. Select the axes in which the good practice that your institution is carrying out is described.**

1. The attraction of women to STEM programs	X
2. Recruitment and access of women to STEM programs	
3. Retention and talent empowerment during STEM training: science and technology teaching	x

2. Describe the good practice and how does it impact the axes you have selected in your institution.

The W-STEM Uninorte Student Group (W-STEM USG) is a student community founded last summer as a mechanism of attraction and retention of young women in STEM fields. The main objectives of this group are:

1. create a physical channel of dissemination for W-STEM PROJECT
2. Attract young women to STEM careers
3. Provide relevant information about STEM careers to young girls in secondary schools
4. Sensitize the community about the importance of gender equity in STEM fields.

Interest activities of the group will include: attraction campaigns in secondary schools; robotics, programming and data analysis seedbeds for college and secondary school female students; conferences with local/national/international role models; mentoring programs for college and school students with alumni and professors; and also activities where college students can share their experiences as STEM students with girls in secondary schools.

The activities we will make through this group are still being planned and they will start next year.

3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	X
Development / Application / Execution	X
Tracking / Control / Evaluation	
Other:	



4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

- As of yet, we have already recruited over 100 students only in Uninorte who will help with the planning, ideation, and execution of all activities.
- Starting August we opened an [Instagram page](#) that has over 200 followers. We share information about STEM role models and the importance of gender equity in STEM fields.
- The group has already made connections with existing robotics, programming, and data analysis seedbeds in order to involve as many key actors as possible.
- On October 19th the first session of the robotics and programming seedbed was made. Girls who assisted were between 6th and 8th grade. Parents and teachers were also there.
- During the last semester we have done a state of the art of role models and information concerning the gender gap in STEM fields.

how will this practice improve (or will improve) the participation of women in STEM programs

All the activities that will be carried out by the group aim to provide support for young girls so they can make a conscious career path decision, instead of being lead by fear, misinformation or stereotypes. By showing young girls what a STEM career actually is, its real-life impacts, role models (past and present) and the importance of more girls being involved in these fields, we aim to create in them the interest of studying one.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	
0512	Biochemistry	
0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	
0532	Earth sciences	X
0533	Physics	
0541	Mathematics	X
0542	Statistics	
0611	Computer use	
0612	Database and network design and administration	
0613	Software and applications development and analysis	
0711	Chemical engineering and processes	
0712	Environmental protection technology	



0713	Electricity and energy	X
0714	Electronics and automation	X
0715	Mechanics and metal trades	
0716	Motor vehicles, ships and, aircraft	X
0721	Food processing	
0722	Materials (glass, paper, plastic and, wood)	
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	X
0732	Building and civil engineering	X
Other	Industrial Engineering	X
Other	Systems Engineering	X

II. Institutional strategies and policies



6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes		No	x
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6.2. If your last answer was yes, how is this good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?

Even though the growth rates of men and women in STEM careers in Uninorte are statistically equal, only one out of three STEM students is a woman. Even if desertion rates are not a worry, it has been noticed that most girls who decide to drop out a STEM career in Uninorte does it because of external reasons (such as being victim of stereotypes, feeling uncomfortable due to classmates behavior or feeling alone and rejected) instead of internal reasons (such as not liking the career, poor performance, contents do not meet the expectation, etc.). Therefore, the idea of having a student group where STEM women support and motivate other STEM women (or potential STEM women) was born.

8. Which resources and support have the institution destined to develop the practice/action/strategy?

- **Teachers:** volunteers who offer their help to the development of the activities.
- **Institutional facilities:** such as auditorium and classrooms
- **“Bienestar Universitario”:** institutional office focused on the integral development of students. They support sports, arts and student groups (as W-STEM Uninorte)

III. Implementation and sustainability



9. Which measurement indicators are being used or will be used?

For every activity the following indicators will be used:

Indicator	How to measure	Goal
Number of assistants	Total number of assistants	40
Number of assistants (STEM women in senior positions)	number of stem women in senior positions/number of assistants	5-10%
Number of assistants (female college students)	number of female college students/number of assistants	20%
Number of assistants (female school students)	number of female school students/number of assistants	50%
Number of assistants (other)	number of assistants (other)/number of assistants	20%
Satisfaction level	number of satisfied assistants/number of assistants	80%
Impact on the career path decision	Number of female school students who would consider studying a STEM career after the activity/number of female school students	60-70%

10.1. How were/are being/will be measured the indicators listed above?

- Satisfaction questionnaires
- Assistance sheets

10.2. Which systems or mechanisms are being used to monitor the achieved results?

After the activity, the indicators will be calculated and an evaluation of them will be made. If the goals are not achieved, corrections will be made; for example; improving strategies, adjusting the indicators, etc.

10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

No (as of yet) but it will be suggested to the admissions office.

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

- Recruitment of college students in order to secure the sustainability of the student group.
- Development of activities that allow to visibilize local role models in order to motivate college girls and minimize desertion rates.
- Networking with other student groups of national and international universities.
- Making relationships with key actors in the processes of attraction and guidance (admissions office, CREE, etc).



12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

- The motivation of students within the student group.
- Planification, organization, and promotion of activities.
- Interest and motivation of STEM women in senior positions
- Institutional support
- Resources (budget and facilities)

12.2. Which was the hardest barrier to overcome? Mention it.

None as of yet. But it could be not having motivated students and relatives, STEM women, etc, or the lack of budget.

12.3. Which was the facilitator? Mention it.

None as of yet. But it could be the logistics and planification of the activities, mostly promotion.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

Through social media (@wstemunbq) and institutional communications office: statistics, videos, and pictures of the activities, invitations to future activities.

13.2. Please attach, if you have any, the most recent results.

There are no tangible results to show. All results were mentioned in section 4.

IV. Future improvements - Women in STEM programs.



14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.

The lack of institutional policies, strategies or mechanisms to promote and support the student group initiatives.

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

- Robotics and programming seedbed.
- R-programming seedbed.
- Mentoring programs between alumni, college students, school students, and people senior positions.

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?

It is expected that by the end of the stay in the group, students can feel empowered and have developed soft skills to complement the technical knowledge they acquire during college years.



W-STEM International Leadership Summit
Good practices: strategies and mechanisms
First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Technical University Dublin
Country	Ireland
Leader of the BM team	
Contact e-mail	

I. Description of the practices and the relation to the BM axes.**1. Select the axes in which the good practice that your institution is carrying out is described.**

1 The attraction of women to STEM programs	X
2. Recruitment and access of women to STEM programs	X
3. Retention and talent empowerment during STEM training: science and technology teaching	X

2. Describe the good practice and how does it impact the axes you have selected in your institution.

The School of Computer Science TU Dublin recognised three years ago that there were many Universities in Ireland trying to crack the gender balance issue in STEM recruitment and retention for students and staff into third level education – but that each University was working separately. In order to share best practice, TU Dublin School of Computer Science contacted all other Schools of Computer Science in Ireland to create a community of practice that has an identity and working brief: INGENICS – Irish Network for Gender Equality in Computer Science.

This group consists of representatives from seventeen of the nineteen Schools of Computer Science in Ireland – forming a powerful network for information sharing, data gathering and collaboration. It spans all the axes identified, and aims to provide a platform through which good practice can be developed and shared to result, ultimately, in greater gender balance in Computer Science in Ireland – both for staff and students.

3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	
Development / Application / Execution	
Tracking / Control / Evaluation	
Other: <u>Ongoing</u>	X



4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

The INGENICS network has produced the following:

- Collated list all gender balance initiatives in computer science carried out by the 17 Schools of Computer Science involved;
- Establishment of an agreed contact list for collaborations;
- Dataset gathering on gender balances on programmes (this is becoming increasingly valuable as our Higher Education Authority no longer produces this breakdown on programmes);
- Inter group collaboration for local initiatives (e.g. ACM special interest group on computer education).
- Contacts with government to explain our effort, identity and aims regarding gender balance in Computer Science.
- Internal (to the network) portal and email group for information sharing.
- External facing website (in progress)

How will this practice improve (or will improve) the participation of women in STEM programs

The partner Universities face the same issue – difficulty in attracting women to Computer Science. Each of them were implementing their own separate initiatives in isolation – instead of pooling and disseminating best practice to enhance the success of these initiatives.

This network is about being stronger as a group than all working alone – it allows for easy access to sharing, contact, collaborations.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	
0512	Biochemistry	
0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	
0532	Earth sciences	
0533	Physics	
0541	Mathematics	
0542	Statistics	
0611	Computer use	X
0612	Database and network design and administration	X



0613	Software and applications development and analysis	X
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0711	Chemical engineering and processes	
0712	Environmental protection technology	
0713	Electricity and energy	
0714	Electronics and automation	
0715	Mechanics and metal trades	
0716	Motor vehicles, ships and, aircraft	
0721	Food processing	
0722	Materials (glass, paper, plastic and, wood)	
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	
0732	Building and civil engineering	

Other	Industrial Engineering	
Other	Systems Engineering	

II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes X		No	?
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6.2. If your last answer was yes, how is this good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

This initiative preceded the development of a specific institutional strategy, but aligns with the strategies and resources that are now in place in Technological University Dublin (TU Dublin). TU Dublin has established a [Directorate of Equality, Diversity and Inclusion](#) since the commencement of this initiative, and is in the process of further developing processes, policy and practice in this area.

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?



In the School of Computer Science in TU Dublin – individual staff put substantial efforts into gender balance initiatives to attract and retain female students. Most of this activity is voluntary and time consuming.

From our informal contacts, we knew other third levels were doing other initiatives – and we concluded that we should all avoid “reinventing the wheel” on gender balance initiatives.

8. Which resources and support have the institution destined to develop the practice/action/strategy?

No formal resource allocated. However, it is enabled to date by:

- Resource support for meeting hosting (room/ budget) – first meet up was hosted by TU Dublin Computer Science
- Staff involved travel to meet ups.

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

Indicator	How to measure	Goal
Data sharing	Number of shared dataset obtained	
Shared initiatives	Number of initiatives we decide to take on (from another third level)	
Staff	Gender balance in staffing in Schools (ultimate objective)	
Students	Gender balance in students in Schools (ultimate objective)	
Collegiality	This is a softer objective that relates to the tacit benefits of communities of practice working together, and the unknown and unpredictable benefits that emerge from these interactions.	

10.1. How were/are being/will be measured the indicators listed above?

One of the objectives of the group is to better enable the collection of data on matters related to the objectives set out.

10.2. Which systems or mechanisms are being used to monitor the achieved results?

As above, the development of mechanism to collect and measure success in achievement of these objectives is one of the key objectives of this community.



10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

TU Dublin is enhancing practice in this area. Currently, quality assurance instruments ask programme committees and Schools within the University to reflect upon gender balance and diversity in general in the validation, review and monitoring of programmes. The output of networks such as this one can inform the further development of policy and practice in this area.

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

The project involves cooperation between existing units in various Universities in Ireland and is focused on the sharing of best practice, and the collegial support for initiatives. This may result, in time, in the development of training, education, and a variety of other initiatives.

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

The initiatives benefits significantly from the collegial cooperation of colleagues, and the support from leaders within the various partners involved.

12.2. Which was the hardest barrier to overcome? Mention it.

The initiative is dependent on the contribution of time on a largely voluntary basis by participants. The network is a disparate group involving a broad group of academics. Maintaining continuity following the establishment of the network is hugely important but takes substantial effort from the leadership of the network.

12.3. Which was the facilitator? Mention it.

Dr Susan McKeever from TU Dublin School of Computer Science is the leader of the network. Her involvement in the network and role in coordination and leadership has been instrumental in the establishment and continued success of the network as a community of practice.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

Dissemination is central to this network, and one of its key objectives. The network represents a key data source for national policy makers as they interface with the Information and



Communications Technology industry in Ireland, in particular in relation to gender issues in the industry.

13.2. Please attach, if you have any, the most recent results.

The School of Computer Science has recently been awarded the Informatics Europe Equality Award sponsored by the Google Research Laboratories.

IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.

The availability of time and resources to run such initiatives is crucial. A strategic approach that involves motivated individuals and support from University leadership is essential.

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

Consolidation of the network is a primary objective, to ensure the long term sustainability of the network. The network prioritises the collection of data and the facilitation of interaction among colleagues facing related challenges.

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?



TU Dublin has a range of important initiatives related to gender equality in STEM disciplines. The [ESTEEM initiative](#), led by Leslie Shoemaker, provides a mentoring programme to support early stage female students in STEM disciplines.

The INGENICS network has served as a data source for the IDA – Ireland’s national enterprise supporting organization, demonstrating how it has established itself as a valuable national resource over its three year history.



W-STEM International Leadership Summit
Good practices: strategies and mechanisms
First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Universidad de Guadalajara
Country	México
Leader of the BM team	Verónica María Rodríguez Betancourt
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I. Description of the practices and the relation to the BM axes.

1. Select the axes in which the good practice that your institution is carrying out is described.

1. The attraction of women to STEM programs	X
2. Recruitment and access of women to STEM programs	
3. Retention and talent empowerment during STEM training: science and technology teaching	

2. Describe the good practice and how does it impact the axes you have selected in your institution.

The University of Guadalajara has a great interest in the promotion of STEM careers and especially the University Center of Exact Sciences and Engineering, so that both institutionally and through the University Center different actions are carried out for the promotion, this promotion Due to the University policies of gender equality, they are open to the whole community (only promotion for women cannot be done, since this will lead to discrimination against men), some of these activities are the exhibitions that are carried out through the Coordination of Student Services (CSE), attached to the General Coordination of University Services (CGSU); through visits to high schools, which are carried out both by the Coordination of Educational Innovation and Undergraduate, as well as by the Extension Unit of CUCEI; events of scientific dissemination such as those organized by CUCEI with the proposal to collaborate in favor of the public perception of science and of the developed society a scientific and technological culture, such as Science for Children, Open Doors, Speak about Science (Charlemos de Ciencia), Friday of Science, World Space Week, the different Weeks Organized by the careers of the University Center; such as the Week of the Chemist, Knowing Chemical Engineering, Logistics and Transportation Engineering Day, etc., through different Chairs, such as the Chair for the dissemination of the Anna María Cetto Scientific Culture, the Neal R. Amundson Chair, the Chair Master Jorge Matute Remus, the Adolph Horn Business Chair, among others; Support for the development of Congresses, such as the International Food Safety Congress, support for the preparation of students preparing for participation in Mathematics, Chemistry, Physics, and Computer Olympics, as well as the present 2019, the booklet ECO-Olympiad. And many other activities that take place both in CUCEI, and in the University Network to promote and bring STEM careers closer to the population.

In addition to participating as regional organizers of Technovation Girl, an event that Every year, invite



teams of girls from all over the world to learn and apply the skills needed to solve real-world problems through technology.

3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	
Development / Application / Execution	
Tracking / Control / Evaluation	X
Other:	

4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

In recent years there has been an increase in the number of students requesting entry to STEM careers, and there has also been an increase in the number of female applicants.

how will this practice improve (or will improve) the participation of women in STEM programs

Events such as Science for Children open to children the interest in Science from an early age, which leads them to later develop an interest in STEM careers, as well as promoting STEM careers in students who are close to choosing their Career (high school students) opens up a world of opportunities, since many times the majority of the population knows the classic careers such as medicine, law, accounting, etc., or those within their family environment, and often do not know the world of opportunities offered by universities and the labor field.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	X
0512	Biochemistry	X
0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	X
0532	Earth sciences	X
0533	Physics	X
0541	Mathematics	X
0542	Statistics	
0611	Computer use	X



0612	Database and network design and administration	X
0613	Software and applications development and analysis	

0711	Chemical engineering and processes	X
0712	Environmental protection technology	X
0713	Electricity and energy	X
0714	Electronics and automation	X
0715	Mechanics and metal trades	
0716	Motor vehicles, ships and, aircraft	X
0721	Food processing	X
0722	Materials (glass, paper, plastic and, wood)	X
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	X
0732	Building and civil engineering	X

0719		X
		X

II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes	X	No	
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6.2. If your last answer was yes, how is this good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

There has been an increase in recent years in the number of students entering these careers, as well as an increase in the number of women. We attach document in excel with statistics

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?

Increase the number of enrollment in non-traditional areas. Traditional areas have a very high demand while new or less traditional careers sometimes demand is very low.



8. Which resources and support have the institution destined to develop the practice/action/strategy?

The support is both administrative and academic, in matters such as the loan of facilities that belong to the University for the development of activities, the economic for rent of spaces, payment of per diem for external guests, promotion payment in both television, radio, as printed, etc., protocol support, etc.

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

For every activity the following indicators will be used:

Demand, income and career ending statistics.

10.1. How were/are being/will be measured the indicators listed above?

These indicators are in charge of the School Control Unit measuring the students who apply for first entry, those who manage to enter the career and those who graduate, since this Unit is responsible for the entrance and exit processes in the institution

10.2. Which systems or mechanisms are being used to monitor the achieved results?

The statistics in our institution due to the Transparency Law are publicly accessible and published so that you can follow up on the semiannual results and analyze the behavior you have regarding the entry of women to STEM careers.

10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

Currently the University for its gender equality policies, all its statistics are presented in numbers of men and women. In addition to being a Public University that receives resources from the government, current policies for the allocation of resources oblige us to maintain gender equity policies and to promote policies, actions and monitoring to have a balanced proportion of students of men and women.

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.



The University of Guadalajara has a great interest in gender equality, a sample is the signing of an agreement between the institution and the National Women's Institute (INMU Women), on September 11, 2018, with a duration of 5 years, with the purpose of generating joint strategies that allow advancing gender equality. In addition, work has been done to give conferences, seminars, diplomas, training and UNESCO chairs on gender equality issues. Likewise, the University of Guadalajara in 2016 signed a collaboration agreement with the United Nations Organization to participate in the HeForShe campaign.

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

The policies of the University have been changing and has given more attention to the problems faced by students, which has resulted in them feeling more comfortable in university centers (such as CUCEI) where most students once They were male. This has favored the increase in the number of female students in STEM careers and University Centers that in previous years were dominated by men.

12.2. Which was the hardest barrier to overcome? Mention it.

Cultural, since in the country there are still many damages in society towards STEM careers considering that these are mostly for men, and although on many occasions high school students want to study these careers their parents and in some cases even teachers They tell you that these are men's races. Or in many sectors of society the ideology that women should not study, they should marry and be housewives, and that they should not continue studying after high school or high school is still preserved.

12.3. Which was the facilitator? Mention it.

The different University units, such as the School Control Unit, the General Academic Coordination, etc. As well as the CUCEI Units, such as the School Control Unit, Career Coordination, Extension Unit, Academic Services Unit, etc.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

Through the institutional pages, social networks and the university gazette.

13.2. Please attach, if you have any, the most recent results.

An excel file with statistics is attached



IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.

More facilities for women mothers, such as the implementation of nurseries in each of the university centers

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

Awareness raising and training on gender issues to members of the university community. The institutionalization of the two protocols of action: Protocol of action for cases of gender violence in the University of Guadalajara and Protocol of action for cases of harassment and sexual harassment of the University of Guadalajara, which seeks to generate adequate conditions for To combat these important issues, hoping that their implementation will help to raise awareness among the members of their community and in turn be reflected in a social change. The updating of gender equality policies in development of IDPs. This information was taken from the document Perception of Gender Equality at the University of Guadalajara.

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?

Scholarships for mothers heads of family and childcare nursery of CUCEA.



W-STEM International Leadership Summit
Good practices: strategies and mechanisms
First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Universidad Tecnológica de Bolívar
Country	Colombia
Leader of the BM team	Sonia Helena Contreras Ortiz
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I. Description of the practices and the relation to the BM axes.

1. Select the axes in which the good practice that your institution is carrying out is described.

1. The attraction of women to STEM programs	
2. Recruitment and access of women to STEM programs	
3. Retention and talent empowerment during STEM training: science and technology teaching	x

2. Describe the good practice and how does it impact the axes you have selected in your institution.

The Child Care Room service of Universidad Tecnológica de Bolivar is a strategy for student permanence that has been created for students and employees who have no one that takes care of their children while they do their academic activities or work. Parents have the confidence that their children are in a safe, caring and stimulating environment, while they do their activities at the university. The service is available for children aged 18 months to 5 years with no charge. It is open from 7:00 am to 12:00m, and from 1:00 pm to 5:00 pm, all the year round. Pregnancy and parenthood is a common cause of dropout of schools and universities. By providing child care services, UTB aims to reduce the risk of dropping out of students parents.

3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	
Development / Application / Execution	X
Tracking / Control / Evaluation	
Other:	

4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)



The Child Care Room service has been available since 2012. The following table shows the number of children that have attended in the last 5 years:

Beneficiary	2015		2016		2017		2018		2019
	1p	1P	2P	2P	1P	2P	1P	2P	1P
Students	9	3	4	18	6	4	11	11	6
Employees	12	9	14	13	4	13	31	30	11
Total	21	12	18	31	10	17	42	41	17

Around 30% of children attend the child care room on a regular basis, and the 70% attend occasionally.



how will this practice improve (or will improve) the participation of women in STEM programs

The child care room provides student parents an opportunity to continue studying while their children are in a safe environment. It can aid in preventing dropout due to parenthood.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	
0512	Biochemistry	
0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	



0532	Earth sciences	
0533	Physics	
0541	Mathematics	
0542	Statistics	

0611	Computer use	
0612	Database and network design and administration	
0613	Software and applications development and analysis	

0711	Chemical engineering and processes	X
0712	Environmental protection technology	X
0713	Electricity and energy	X
0714	Electronics and automation	X
0715	Mechanics and metal trades	X
0716	Motor vehicles, ships and, aircraft	X
0721	Food processing	
0722	Materials (glass, paper, plastic and, wood)	
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	
0732	Building and civil engineering	X

Other	Industrial Engineering	X
Other	Systems Engineering	X
Other	Mechanical engineering	X
Other	Biomedical engineering	X

II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes		No	X
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6.2. If your last answer was yes, how is this good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.



7. Which were the main reasons you had to develop this practice/action/strategy in your institution?
What was the situation to solve?

The university is located in the outskirts of Cartagena, close to the industrial zone. There are no day care facilities close to the campus. As employees and students parents were having problems to find a place to leave their children, the university decided to open the child care room service in 2012.

8. Which resources and support have the institution destined to develop the practice/action/strategy?

- **Teacher:** There is one teacher with studies in early childhood education hired full time to take care of the children.
- **Psychologist:** a psychologist from the department of Student Wellness monitors the activities of the child care service and the wellbeing of the children.
- **Institutional facilities:** there is a classroom arranged for age-appropriate learning.

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

For every activity the following indicators will be used:

Indicator	How to measure	Goal
Number of children enrolled	Total number of assistants	30

10.1. How were/are being/will be measured the indicators listed above?

Assistance records

10.2. Which systems or mechanisms are being used to monitor the achieved results?

The teacher fill out assistance records every day.

10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

No. It is an indicator that UTB will start to measure.



11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

There is a program for dropout prevention that includes monitoring of academic progress of students with low academic performance, counseling, academic advice, financial support, workshops, tutorials

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

- Children are prepared to start the preschool education.
- The energy, love and enthusiasm with which children are cared for.
- Parents are confident because the children are well cared and close to them.

12.2. Which was the hardest barrier to overcome? Mention it.

- Sometimes parents do not comply with the rules or requirements of the children's room
- At the beginning of each semester there are few children attending the children care service.
- The room is small and there is no playground. A new space is being built.

12.3. Which was the facilitator? Mention it.

The institutional support through these years.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

Through institutional communications office.

13.2. Please attach, if you have any, the most recent results.

The results were mentioned in section 4.

IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?



Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.

- Social and cultural aspects that prevent young women to choose STEM programs.

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

- Promoting engineering programs in school-age girls.
- Offering special support to female students so that they can overcome gender-related barriers for their education.
- Mentoring programs.

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?



W-STEM International Leadership Summit
Good practices: strategies and mechanisms
First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Universidad de Costa Rica
Country	Costa Rica
Leader of the BM team	Evelyn Salas Valerio
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I. Description of the practices and the relation to the BM axes.

1. Select the axes in which the good practice that your institution is carrying out is described.

1. The attraction of women to STEM programs	X
2. Recruitment and access of women to STEM programs	
3. Retention and talent empowerment during STEM training: science and technology teaching	x

2. Describe the good practice and how does it impact the axes you have selected in your institution.

The Woman in Engineering Project is a programme of the Office of the Vice President for Social Action of the University of Costa Rica that works to attract female students to the areas of engineering. The program is run by 5 female teachers of the Faculty of Engineering and has three target audiences: primary school students (with an emphasis on the male audience to raise awareness), female and male high school students (with an emphasis on women), and students of the Faculty of Engineering of the UCR. Elementary students were recently included in the Program.

We work with high school students to attract them, keep them informed and sensitize them in the areas of engineering, so we develop workshops in secondary schools. Based on simple activities and materials, students understand where and on what the engineers work in different companies or institutions at national or international level. We also explain the impact that these professionals make on a social level in the world and how they can become promoters of innovative social, economic, environmental changes, among others. We want from them to choose a career with criteria and information.

In the case of university students, it is sought to keep them and motivate them to continue in the areas of engineering, to avoid migration to saturated areas or with greater female presence. For the students of the Faculty we develop talks, conferences, conversations, workshops, visits to companies, field visits. We have a consolidated group called Café de las Ingenieras where once a month we do an activity to gather them and they define the activities to develop in the near future. We carry out recreational activities such as convivios, yoga classes, among other things.

For primary schools, we are working on developing awareness and information workshops. The idea is that they interact with simple materials for understanding of the impact of engineering on Costa Rican and global society. We also seek to eliminate stereotypes from young ages.

3. In which stage of development is the practice you mentioned above (project/program/service)?

Select the stage with an X



Creation / design / planning	
Development / Application / Execution	X
Tracking / Control / Evaluation	X
Other:	

4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

In the 10 years we have worked:

- Every year we have visited 6 and 8 schools in the country. Our impact zone, although it is the great metropolitan area, we have visited schools in Parrita, Quepos, Sarapiquí, and in rural areas of Heredia and Cartago. Every workshops have count with almost 30 students each.
- We print and deliver more than 3000 dissemination and information materials for high school students per year.
- We develop, every year, at least 5 activities for students of the Faculty of Engineering (talks, conferences, visits to companies, Café de las Ingenieras, recreational activities).
- We are in the process of finishing a research related to why the chemical engineering career have parity in their enrollment nowadays. We want to determine which factors or aspects promoted this situation so we can apply them to improve the female presence in all the engineering careers.
- We have accounts on social networks such as Facebook and Instagram. The Facebook account has more than 4000 followers, and our recently open Instagram account 466 followers.

how will this practice improve (or will improve) the participation of women in STEM programs

Woman in Engineering seeks High School students to choose a career in a more informed way and being aware of the areas in which an engineer can work and its impact on society. In addition to showing them the careers with a boom in the labor market so they can look for opportunities for personal, professional, economic and family growth, the project has also sought to generate community among the students of the Faculty of Engineering. We create group which allows them to feel accompanied, represented, happy of being part of a community of engineers. We expect from them the replication of these experiences with students who are starting their studies so less women abandone the engineering field.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	
0512	Biochemistry	



0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	x
0532	Earth sciences	
0533	Physics	x
0541	Mathematics	X
0542	Statistics	

0611	Computer use	x
0612	Database and network design and administration	
0613	Software and applications development and analysis	X

0711	Chemical engineering and processes	x
0712	Environmental protection technology	
0713	Electricity and energy	X
0714	Electronics and automation	X
0715	Mechanics and metal trades	x
0716	Motor vehicles, ships and, aircraft	
0721	Food processing	x
0722	Materials (glass, paper, plastic and, wood)	x
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	X
0732	Building and civil engineering	X

Other	Industrial Engineering	X
Other	Systems Engineering	X
Other	Agricultural and Biosystem Engineering	x
Other	Topographic Engineering	x

II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes	x	No	
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6.2. If your last answer was yes, how is this good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

The University of Costa Rica has policies on these issues. The Women in Engineering Project adds to reaching those actions.

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?

There is a problem in the Faculty of Engineering of the University of Costa Rica, regarding the percentage of women in engineering careers: only 32% of the total students in the Faculty are women. Even the quantity may be less in Mechanical and Electrical Engineerings.

8. Which resources and support have the institution destined to develop the practice/action/strategy?

Appointment of 5 teachers: 1 from the School of Electrical Engineering and 4 from Industrial Engineering.
Support of students from University Community Work (TCU)
Support of volunteer students
Economic resources for 5 years
Transportation offered by the University of Costa Rica

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

The following indicators are used for each activity:



Goal	Indicator	Measure
Send information on the different Engineering to at least 30 Secondary Schools around Rodrigo Facio Headquarters and Interuniversity Headquarter of Alajuela.	Number of Secondary Schools to which information was sent	Quantitative Quantity: 30
Visit at least 4 schools in the Rodrigo Facio Headquarters area and at least 2 in the Alajuela Interuniversity Headquarters area	Number of visits to Secondary Schools by zone	Quantitative - Quantity 6
To perform at least one workshop in a primary education center in the metropolitan area.	Number of visits made to primary education centers	Quantitative - Quantity 1
To have at least 2 spaces in social networks with more than 1000 members, where more than 60% are women.	Number of spaces in social networks with more than 1000 members and that 60% of members are women	Quantitative - Quantity 2
To make at least 4 talks, conversations, activities per year, for university students.	Number of talks, conversations, activities held per year, for university students.	Quantitative - Quantity 4
Perform at least 3 activities in conjunction with institutions, private companies, organizations or professionals (Two at Rodrigo Facio Headquarters and one at Alajuela Interuniversity Headquarters).	Number of activities carried out jointly with institutions, private companies, organizations or professionals per headquarter.	Quantitative - Quantity 3
Analyze, systematize and define actions based on the results of the application of the quantitative instrument, which supports the entry of women into engineering careers.	Number of actions defined to support the entry of women to engineering careers	Qualitative
Define the work plan to carry out the research in at least another career of the Faculty of Engineering.	Defined work plan	Qualitative

10.1. How were/are being/will be measured the indicators listed above?

Instruments for evaluation of the activities and through the systematization of assistance lists.

10.2. Which systems or mechanisms are being used to monitor the achieved results?

Report of work that is presented each year to the Vice-Rector of Social Action with all the achievements and results, in addition to the report on the use of the allocated budget.



10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

No, unfortunately that follow-up is not done, the income and graduation data are available, but no further actions are taken outside of this.

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

- Maintain the team of teachers for better team cohesion and confirmation of commitments with the project.
- Establishment of alliances with other projects from the UCR and other public universities.
- Establishment of alliance with companies and institutions.
- Establishment of greater communication with the Heads of Schools of the Faculty of Engineering, to increase support for the project.
- Greater social media strategy to improve the dissemination of the information and achievements of the project.

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

- The motivation and commitment of the teachers from the team of Women in Engineering team.
- The motivation of the students of the Faculty who participate and support the activities.
- The planning, organization of all the activities that are developed.
- The lack of community feeling between the students at the Faculty of Engineering and approach to the teaching staff.
- The students need for performing join activities.
- The need for national promotion of gender issues makes Primary and Secondary Schools approach us.
- The need for increasing the number of engineers in national and foreign organizations.

12.2. Which was the hardest barrier to overcome? Mention it.

- Sometimes the lack of response of university students to activities.
- The workloads that students have that sometimes makes them unable to attend the activities.
- Lack of time of project assigned teachers to develop more visits to Schools.

12.3. Which was the facilitator? Mention it.



- The insufficient resources provided by the University
- The lack of commitment from the teachers

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

Each activity is disclosed through the social media. In addition, a work report is presented to the Vice-Rector of Social Action at the University.

13.2. Please attach, if you have any, the most recent results.

We have not yet this year report.

IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.

- The work with the teachers to sensitize them. The project has tried to do it, but it is an audience that is difficult to gather.
- Higher number of teachers assigned to the project, because they are very few hours between all to develop so many activities.
- Support, participation and accompaniment of authorities on these issues.

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

- Increase visits to Primary and Secondary Schools
- Increase field visits to companies.
- More work with the teachers from the Faculty of Engineering.

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?

No, thanks.



W-STEM International Leadership Summit
 Good practices: strategies and mechanisms
 First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Universidad Técnica Particular de Loja
Country	Ecuador
Leader of the BM team	Samantha Cueva
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I. Description of the practices and the relation to the BM axes.

1. Select the axes in which the good practice that your institution is carrying out is described.

1 The attraction of women to STEM programs	X
2. Recruitment and access of women to STEM programs	X
3. Retention and talent empowerment during STEM training: science and technology teaching	

2. Describe the good practice and how does it impact the axes you have selected in your institution.

Creative Robotics Project

Inclusive approach of children towards technology, developing a proactive and proactive attitude that allows them to design and implement their own toys with the support of teachers of municipal schools, in the space of scientific clubs that promote affinity for STEM branches.

3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	
Development / Application / Execution	X
Tracking / Control / Evaluation	
Other:	

4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

•



how will this practice improve (or will improve) the participation of women in STEM programs

The project contributes or improves the participation of women in engineering, given that it carries out inclusive activities with STEM branches for all children equally without gender differences.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study	
0511	Biology	
0512	Biochemistry	
0521	Environmental sciences	
0522	Natural environments and wildlife	
0531	Chemistry	
0532	Earth sciences	
0533	Physics	
0541	Mathematics	
0542	Statistics	
0611	Computer use	X
0612	Database and network design and administration	
0613	Software and applications development and analysis	
0711	Chemical engineering and processes	
0712	Environmental protection technology	
0713	Electricity and energy	
0714	Electronics and automation	
0715	Mechanics and metal trades	
0716	Motor vehicles, ships and, aircraft	
0721	Food processing	
0722	Materials (glass, paper, plastic and, wood)	
0723	Textiles (clothes, footwear and, leather)	
0724	Mining and extraction	
0731	Architecture and town planning	
0732	Building and civil engineering	
Other	Industrial Engineering	
Other	Systems Engineering	



II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes	X	No	
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6.2. If your last answer was yes, how is this good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?

The creative robotics project in schools aims to introduce children to the STEM branches. The STEM paradigm encourages the acquisition and development of skills in problem solving, teamwork, communication, autonomy and personal initiative, learning to learn and entrepreneurial spirit. The project proposes the integrated acquisition of skills in these fields, based on the design and construction of real objects. Robotics allows you to develop STEM learning naturally.

8. Which resources and support have the institution destined to develop the practice/action/strategy?

- Professors
- Students
- Infrastructure
- Knowledge

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

For every activity the following indicators will be used:



Indicator	How to measure	2016	2017	2018
Number of assistants	Total number of assistants	280	347	372
Number of assistants (STEM women in senior positions)	number of stem women in senior positions/number of assistants	0,36	0,29	0,27
Number of assistants (female college students)	number of female college students/number of assistants	3,56	4,03	3,76
Number of assistants (female school students)	number of female school students/number of assistants	38,93	43,23	41,67
Number of assistants (other)	number of assistants (other)/number of assistants	61,07	56,77	58,33
Satisfaction level	number of satisfied assistants/number of assistants	90	90	90
Impact on the career path decision	Number of female school students who would consider studying a STEM career after the activity/number of female school students	Bajo	Medio	Alto

10.1. How were/are being/will be measured the indicators listed above?

- Direct observation
- Surveys

10.2. Which systems or mechanisms are being used to monitor the achieved results?

- Surveys

10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

No yet

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

- Recruitment of specialized personnel
- Training

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

- STEM students involved.
- Motivated girls with STEM training.

12.2. Which was the hardest barrier to overcome? Mention it.



The biggest obstacle was incompatibility between academic calendars in the UTPL and in schools.

12.3. Which was the facilitator? Mention it.

The project related to the request of the Ministry of Education to promote in schools the so-called scientific-technological field of action. The opening of the UTPL and the school to develop the project.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

The results were disseminated by the local press, and through the UTPL spaces to show good teaching practices.

13.2. Please attach, if you have any, the most recent results.

IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Between the aspects that can be modified/solutioned in your institution, mention those that you consider determinant in the future relating to the participation of women in STEM programs.



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15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

-

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?



W-STEM International Leadership Summit
 Good practices: strategies and mechanisms
 First benchmarking round, Barranquilla, November 28th, 2019

GENERAL INFORMATION

Partner	Universidad Técnica del Norteg
Country	Ecuador
Leader of the BM team	Ana Cabrera Tobar – Winston Oviedo
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I. Description of the practices and the relation to the BM axes.

1. Select the axes in which the good practice that your institution is carrying out is described.

1 The attraction of women to STEM programs	X
2. Recruitment and access of women to STEM programs	
3. Retention and talent empowerment during STEM training: science and technology teaching	x

2. Describe the good practice and how does it impact the axes you have selected in your institution.

In order to develop a good practice, the W-STEM group of the Universidad Técnica del Norte (FICA-STEM) was founded in April 2019. The group was founded with a task force integrated by female technicians, lecturers, researchers and professors that belongs to STEM programs plus the people who already is working in the W-STEM Project. The main objectives of this group are:

1. Support female students that are already in STEM majors.
2. Attract women of different ages to STEM careers.
3. Disseminate information about the W-STEM project.
4. Enhance the talent empowerment during STEM training.

Thus, the activities of the group include:

- Attraction workshops addressed to young girls in secondary schools.
- Continuous social meetings between the female lecturers, researchers and professors.
- Workshops to provide information about STEM majors addressed to junior university students.
- Workshops to provide information about companies and CV enhancement to senior university students.
- Continuous mentoring of female college students in charge of the task force. The mentoring includes three key aspects: i) support to the students in their daily student life, ii) include to the students in research projects, iii) help them to develop their own network of contacts.
- Conferences with local, national and international females' experts addressed to students in STEM programs



3. In which stage of development is the practice you mentioned above (project/program/service)?

<i>Select the stage with an X</i>	
Creation / design / planning	X
Development / Application / Execution	X
Tracking / Control / Evaluation	
Other:	

4. Which are the main results that you have achieved and how will this practice improve (or will improve) the participation of women in STEM programs?

Results (If you still have no results leave this space blank)

- We have developed a task force that includes female researchers, lecturers and professors that belongs to the Faculty of applied sciences. This task force has developed small social activities that helps to enhance the networking between them. Furthermore, the group is active in every activity that the University has developed, so female students can join to this group on these activities and feel identified.
- A T-shirt has been designed and elaborated that helps to identify the group and the WSTEM project.
- The group has developed a Facebook page to share information about STEM activities, the WSTEM project, and current role models in STEM programs.
- The group has already developed an attraction activity addressed to students of secondary schools. This activity was focused in four main points: dissemination of WSTEM projects, talks by female lecturers about STEM majors, group talks by engineering students about student life, talks about equity by the Student Welfare Service of the University.

how will this practice improve (or will improve) the participation of women in STEM programs

The different activities developed have results around the two main axes: attraction and retention. The main key in our project is the taskforce developed by female technicians, lecturers, researchers and professor. The support of them has helped to create activities with good role models in the STEM area for secondary and college students. This group is also mentoring to female students that are looking for support in the daily student life. We think that a good example can motivate to them to start or to stay in a STEM area.

5. In which STEM programs of your institution is the good practice mentioned above focused?

ISCED code	Field of study



0511	Biology	X
0512	Biochemistry	
0521	Environmental sciences	X
0522	Natural environments and wildlife	X
0531	Chemistry	
0532	Earth sciences	
0533	Physics	
0541	Mathematics	
0542	Statistics	

0611	Computer use	
0612	Database and network design and administration	X
0613	Software and applications development and analysis	X

0711	Chemical engineering and processes	
0712	Environmental protection technology	
0713	Electricity and energy	X
0714	Electronics and automation	
0715	Mechanics and metal trades	
0716	Motor vehicles, ships and, aircraft	X
0721	Food processing	
0722	Materials (glass, paper, plastic and, wood)	
0723	Textiles (clothes, footwear and, leather)	X
0724	Mining and extraction	
0731	Architecture and town planning	
0732	Building and civil engineering	

Other	Industrial Engineering	X
Other	Mechatronics Engineering	X

II. Institutional strategies and policies

6.1. Is this good practice an answer to an institutional strategy that aims to improve the participation of women in STEM programs?

Yes	X	No	
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6.2. If your last answer was yes, how is this Good practice aligned or contributes to this strategy?

Attach to your answer e-mail a copy of the strategy and/or any document you consider relevant.

The Universidad Técnica del Norte has 15 strategies to comply with equity gender regulations required by the Ecuadorian constitution and the Ecuadorian regulations of Universities. The good practice acquired by WSTEM is aligned to the strategies: 2, 3, 6, 7, 8, and 9 stated in the document:

[document](#)

7. Which were the main reasons you had to develop this practice/action/strategy in your institution? What was the situation to solve?

The Universidad Técnica del Norte has several majors in the STEM area. Although, not many female students are part of this program, there are a good number of female lecturers, researchers and professors. In a first meeting, the task force identified some problems:

- Lack of integration among female technician, lecturers, researchers and professors at the University
- Lack of knowledge of what a STEM program is for college and high school students.
- Lack of support to current female students who feels alone on these programs.

Thus, the first step was to develop a group considering female lecturers, researchers and professors. Then, to develop several activities to explain what a STEM program is. Furthermore, this group helps to mentor current students at the University in STEMs programs.

8. Which resources and support have the institution destined to develop the practice/action/strategy?

- Lecturers, readers, researchers, professors, technicians
- Institutional facilities as auditorium, projectors, classrooms, and sport facilities.
- Student Welfare Service
- Communication, printing and marketing team
- Specialized software for meeting planning

III. Implementation and sustainability

9. Which measurement indicators are being used or will be used?

Indicator	Evidence
Number of total assistants	Registration sheet
Percentage of assistants (STEM women in senior positions)	Registration sheet
Percentage of assistants (female college students)	Registration sheet
Percentage of assistants (female high school students)	Registration sheet
Percentage of assistants (others)	Registration sheet
Percentage of satisfaction level	Poll
Percentage of students chosen STEM programs	Registered female students in STEM programs (junior levels)
Percentage of female students staying in STEM programs	Registered female students in STEM programs (senior levels)
Percentage of female students graduating from STEM programs	List of graduate students
Percentage of female students that have failed in a STEM program	List of graduate students
Percentage of female students with honors in a STEM program	List of honor students
Percentage of female students that have failed in any level in a STEM program	List of students failing the semester
Percentage of graduated females with a job position in the area	Information list of graduated students

10.1. How were/are being/will be measured the indicators listed above?

Indicator	Evidence
Number of total assistants	Number of assistant/numbers og guest lists
Percentage of assistants (STEM women in senior positions)	Number of STEM women in senior position/number of assistants
Percentage of assistants (female college students)	Number of female college students/ number of assistants
Percentage of assistants (female high school students)	Number of female high school students/number of assistants
Percentage of assistants (others)	Number of other assitants/ number of assistants

Percentage of satisfaction level	Number of satisfied students/ numbers of total assistants
Percentage of female students chosen STEM programs	Number of female students in junior level/ total students in junior level
Percentage of female students staying in STEM programs	Number of female students in senior level/ total students in senior level
Percentage of female students graduating from STEM programs	Number of graduated female students / total graduated students
Percentage of female students with honors in a STEM program	Number of female students with honors/Number of honor students
Percentage of female students that have failed in any level in a STEM program	Number of female students that have failed in any level/Number of students failing the semester in a STEM program
Percentage of graduated females with a job position in the area	Number of graduated females with job position / total number of graduated females

10.2. Which systems or mechanisms are being used to monitor the achieved results?

Attendance sheet, student registration data base, graduated student's data base, general polls about the events.

10.3. Does the institution track the improvement of the participation of women in STEM programs in the selected axis(es)?

Yes, it is part of the strategies mentioned in question 6.2

11. Which actions are being carried out to secure sustained achievements in the identified axis(es)? For example training, education, recruitment of specialized personnel, external counseling, process formalization.

- Each STEM major promotes their activities and objectives to students of high schools by personal visits, open days, and their social web pages as Facebook and Instagram.
- Networking with internal and external groups as IEEE, Women in Power, Women in Engineering.

- During the semester, the group develops mentoring activities.
- The development and organization of activities as conferences, and workshops to motivate female students to pursue STEM programs.
- Develop of psychometric tests to understand if there is a problem in numerical reasoning, verbal and spatial reasoning.

12.1. Which factors (of success or failure) explain the obtained results?

If you have no result as of yet, mention the factors you think will explain the results.

- Motivation of the task force part of the group.
- Organization of the different activities.
- Number of participants.
- Institutional support
- Affinity group of students that supports the project as IEEE, WIE, W-PES.

12.2. Which was the hardest barrier to overcome? Mention it.

This task force developed as the WSTEM group is volunteer. Thus, the time of the people who are part of this is limited. So, the problem to overcome was to match the time of everyone to organize and develop the different activities.

12.3. Which was the facilitator? Mention it.

The main facilitators of the different activities are from the WSTEM group, and the affinity groups as FICA-STEM, IEEE, Women in power and Women in Engineering.

13.1. How do you disseminate the results and achievements with the university community and external stakeholders?

The dissemination of the results is developed by the Facebook page (FICA STEM) and the institutional communication platforms (TV channel, radio, official web page, Facebook page (Universidad Técnica del Norte) informative billboard).

13.2. Please attach, if you have any, the most recent results.

Please see the documentation in [Activities](#)

IV. Future improvements - Women in STEM programs.

14. Which are the main problems/uncertainties/barriers to overcome in the mid and long-term on your institution/program/dependence?

Considering the inclusion of more women in STEM programs, the problems, uncertainties and barriers to overcome are:

- Communication with ex female students among the STEM programs
- The lack of a strong network of female professionals that had been part of the University's STEM programs.
- Encourage empowerment initiatives to academic staff and students.
- Have a coaching team to support and encourage woman of different ages to STEM programs
- Develop efficient communication channels to promote the success cases of women in STEM programs.
- Have clear indicators to evaluate the access and retention of women in the different STEM programs.
- There is not an appropriate marketing initiative to promote STEM programs to young students.
- Lack of appropriate training to academic and administrative staff about inclusion and equity.

15. Which are the main priorities, projects/programs/mechanisms to develop, in the mid and long-term in your institution, program or dependence relating to the improvement of the participation of women in STEM programs?

- The main priority is the support and empowerment of female students that are currently in any STEM program at the University. Therefore, one of the following activities is focused to enhance the knowledge of the STEMs program in junior students. The other main activity is for students in the final levels of the STEM programs to help them to enhance the CV and how to prepare for the professional life.

16. Do you have other important aspects to add or specific examples to illustrate the practices that have had the best results?

It is worth to mention that a strength group of females as mentors and collaborators in the STEMs programs can help to achieve any of these axes. Therefore, the first stage of this "good practice" is to enhance the bonds among the female technicians, researchers, lecturers and professors. Then, any activity of training, attraction and retention can be developed and enhanced through the years.

Furthermore, the support of the different authorities of the university are an important factor in order to have success on any activities.

Unidad de Cultura Científica y de la Innovación (UCC+i)

Scientific Culture and Innovation Unit

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UNIVERSIDAD
DE SALAMANCA

CAMPUS DE EXCELENCIA INTERNACIONAL

OBJECTIVES

- The unit is under the Vice-Rectorate for Research and Transfer of the University of Salamanca
- Its objectives
 - the dissemination of scientific and technological knowledge produced at the University of Salamanca
 - the recognition of its scientific heritage
 - The promotion of STEM programs
 - the promotion of scientific vocations at all stages Educational

HOW

- The UCC+i carries out an annual program of events and programs
- Each program has a call in which the members of the university community can apply to organize events
- UCC+i review the proposals and select those that match with the objectives of the program and the unit
- Open to the university community: teaching and research staff, students and administration and services staff

BUDGET

- They have a low budget for each academic year
- But they provide support for
 - booking spaces
 - engaging participants in the events
 - contacting external stakeholders
 - disseminating the events
 - looking for speakers
 - ...

GIRL AND WOMEN IN SCIENCE

- Activities around the international day (11 February)
 - Speed dating with researchers
 - Talks in schools
 - Visits to research centers
 - Exhibitions
 - Breakfast of women researchers
- The activities are designed for all audiences and except for the concerted activities in schools, all are freely accessible



SCIENTIFIC SPRING

- Celebration of the “Scientific spring” on May (five editions)
- Pechakucha Night Salamanca vol.16 about STEM
 - Stat Wars: The Data Awakens
 - Celebration of the International Day of Light
 - Mineral fair (five editions)
 - Exhibition “Undergraph”
 - ...



SCIENTIFIC SUMMER CAMP

- Scientific Summer Camp for children (four editions)
- http://culturacientifica.docenciavirtual.es/index.php?option=com_sppagebuilder&view=page&id=47



SCIENCE WEEK



The illustration depicts a laboratory scene. On the left, a scientist with dark curly hair and a white lab coat is looking through a microscope. In the center, another scientist with glasses and a white lab coat is sitting at a desk, looking at a calendar. The calendar shows the dates from 19 to 27. On the desk, there are various scientific items: a blue desk lamp, a globe, a beaker, and a small airplane. The background is a grid pattern.

04/11 — 17/11/2019
**Semana
de la Ciencia**

UNIDAD DE CULTURA CIENTÍFICA Y DE LA INNOVACIÓN
VICERRECTORADO DE INVESTIGACIÓN Y TRANSFERENCIA
UNIVERSIDAD DE SALAMANCA

culturacientifica.usal.es f t @UCCIUSAL

Logos of various organizations: WISS, FEDYT, and IBEROROLA.

<https://culturacientifica.usal.es>

VNiVERSIDAD D SALAMANCA

Unidad de **Cultura Científica**
y de la Innovación

Disclaimer

W-STEM (Building the future of Latin America: engaging women into STEM) is a project funded under European Union ERASMUS +

Capacity-building in Higher Education Programme
(598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP)

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Wstern



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de Bolívar



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Regional College



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de Monterrey



PONTIFICIA UNIVERSIDAD
CATOLICA
DE VALPARAISO



UNIVERSIDAD TECNICA
FEDERICO SANTA MARIA



TEC | Tecnológico
de Costa Rica

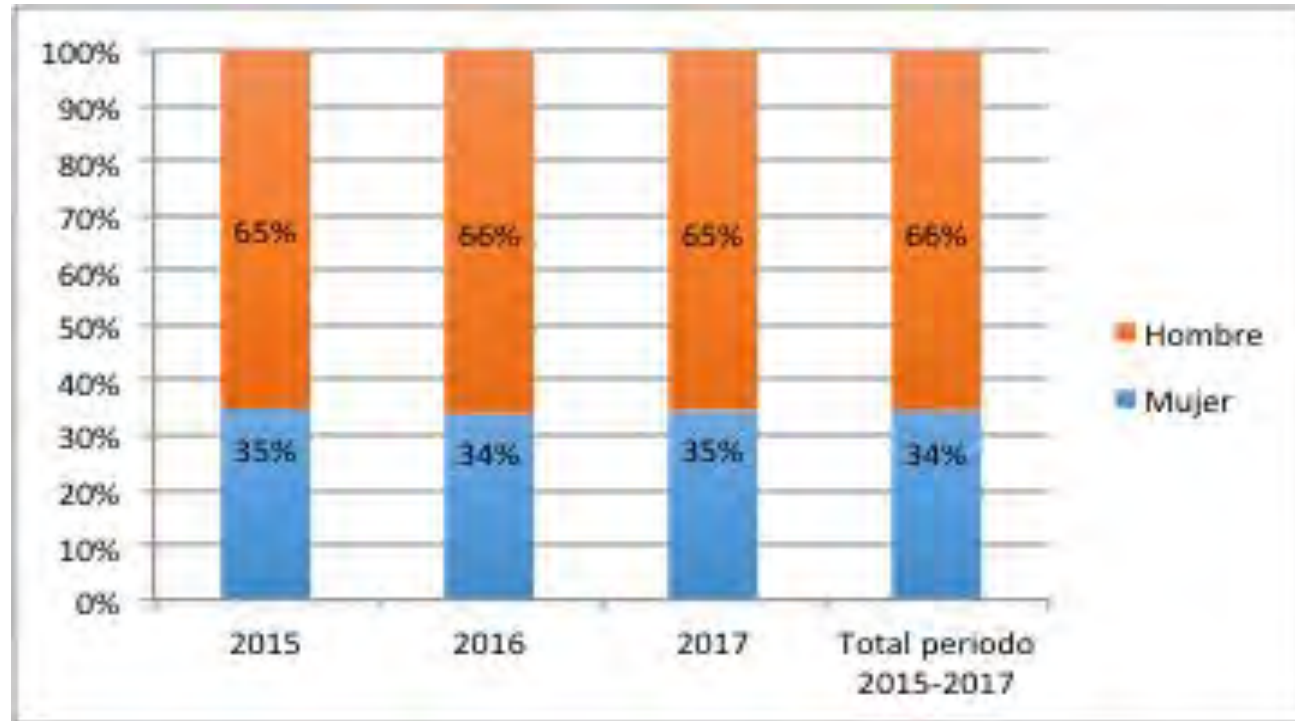
ITCR

TEC | Tecnológico
de Costa Rica



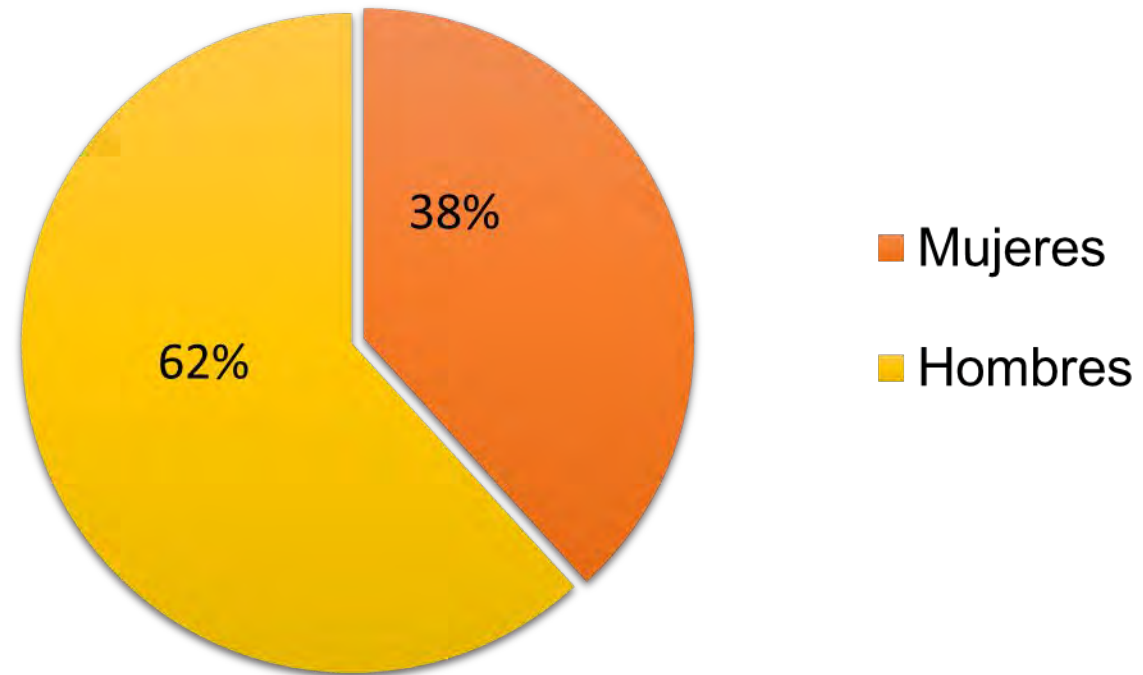
STEM- ACADEMIC PROGRAMS

Students



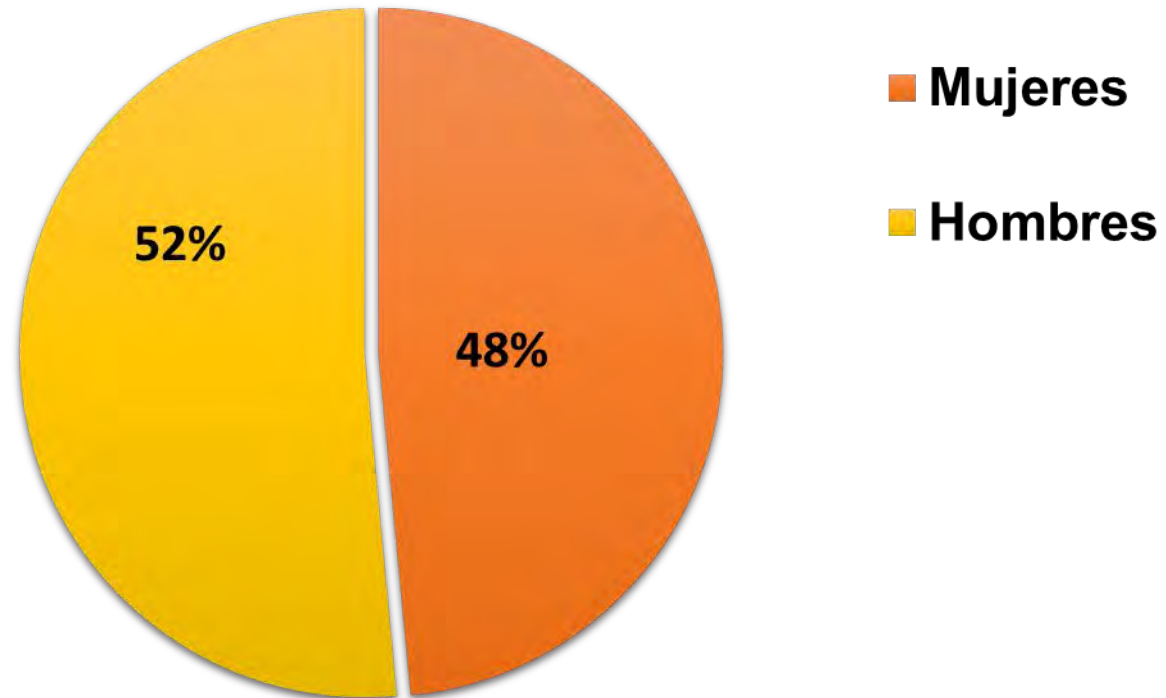
Human Resources

Gráfico 1. Personal del ITCR según sexo



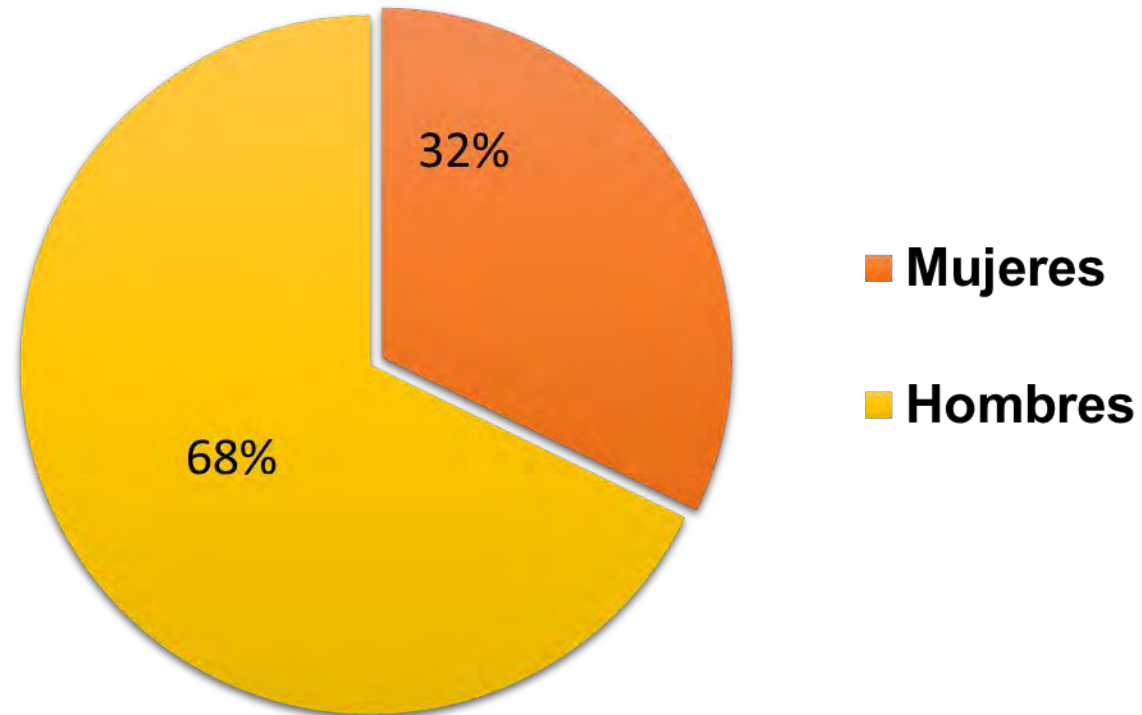
Administrative Staff

Gráfico 2. Personal administrativo según sexo

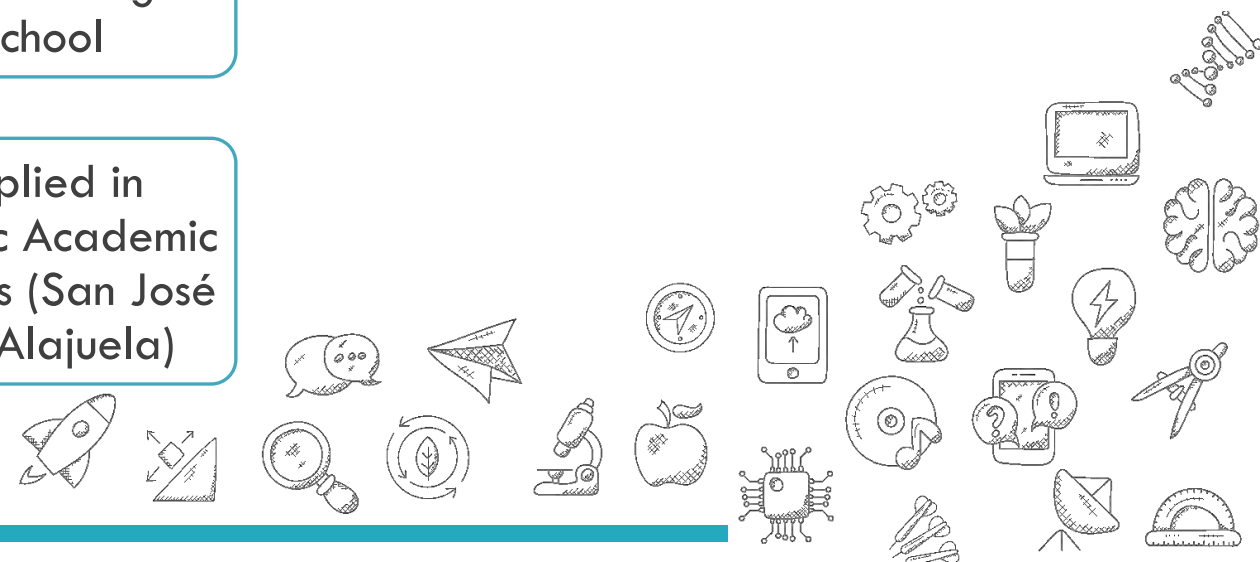
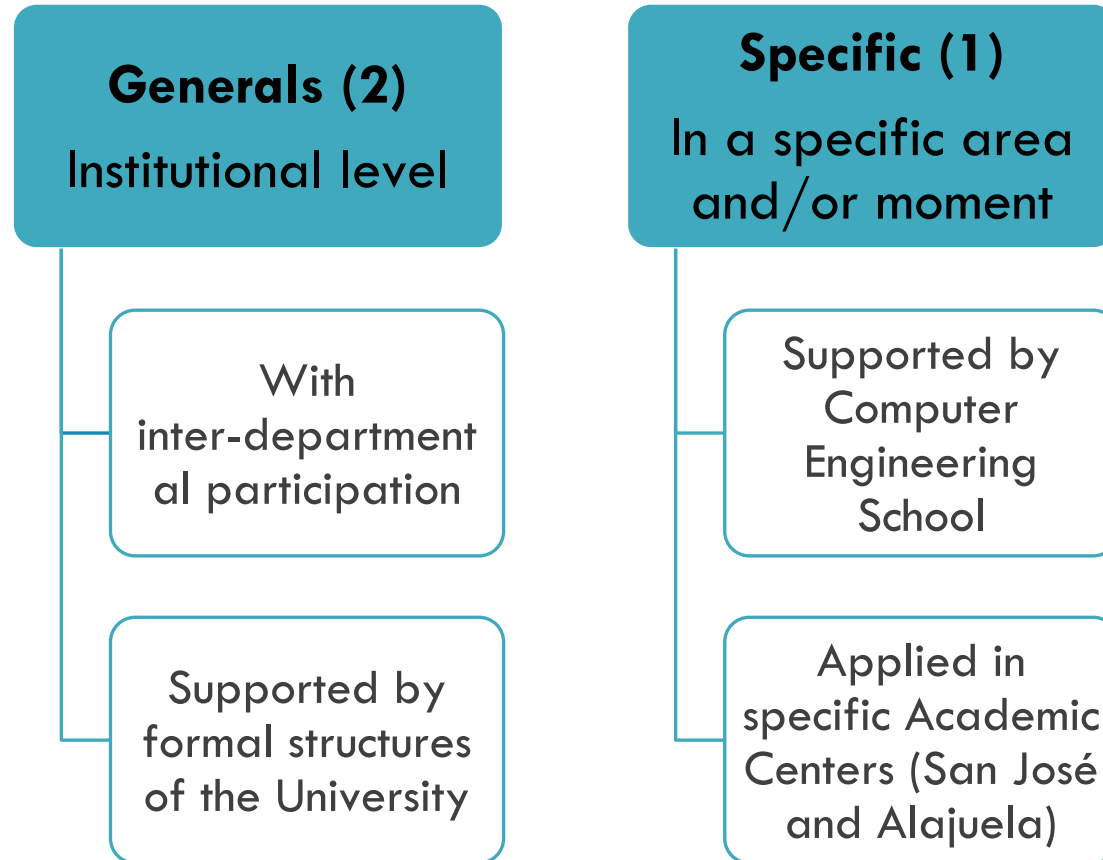


Academic Staff

Gráfico 3. Personal docente según sexo



WE CHOSE THREE GOOD PRACTICES





Building the future of Latin America: engaging women into STEM (W-STEM)

**Interdepartmental
commission** |

#1

INTERDEPARTAMENTAL GROUP ON ATTRACTION, RETENTION AND ACCESS TO WORK OF WOMEN IN ENGINEERING

Interinstitutional composition

Vice-Presidents:
-Research and Extension
-Student life
-Academic

Gender Equity Office

Orientation Department

Institutional Planning Office

Office of Human Resources

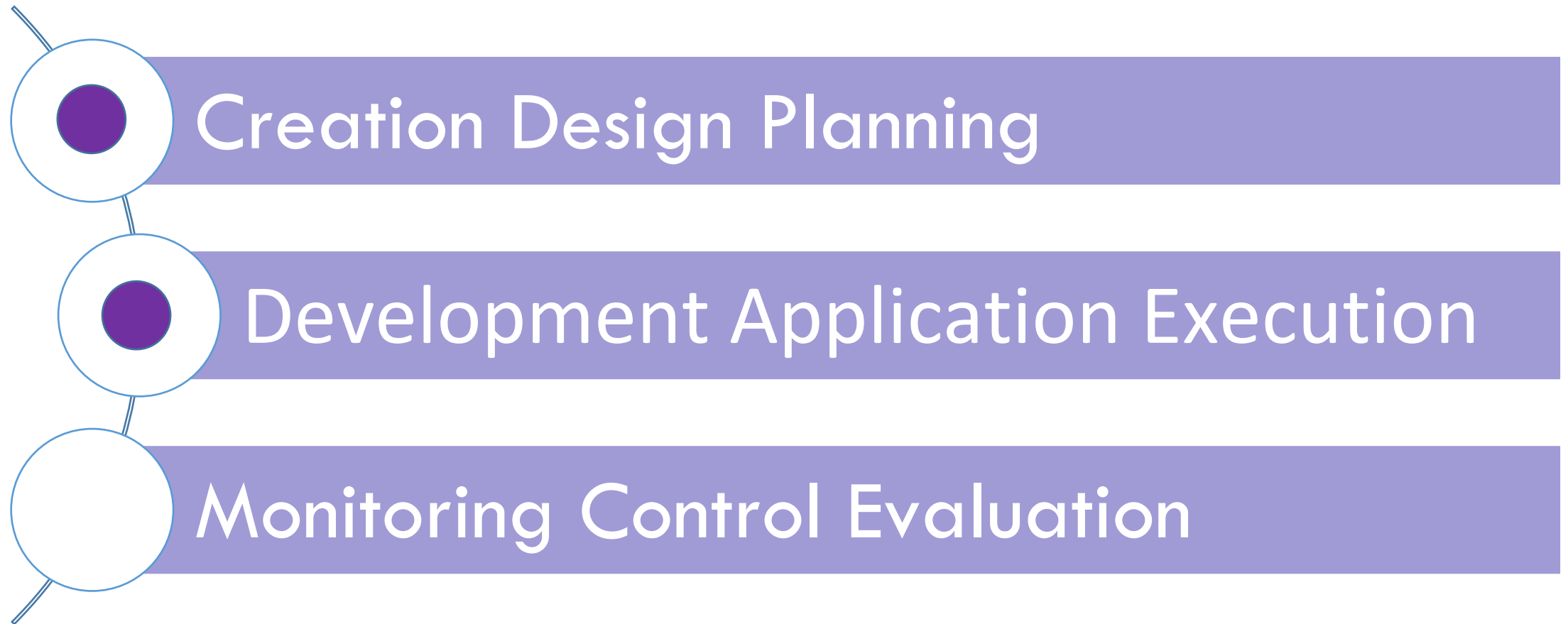
Linking Office

Communication and Marketing Office

Goals

- Include in the process, affirmative actions to increase women in STEM.
- Develop actions to increase the enrollment women in the ITCR.
- Implement actions to retention of women:
 - violence free space
 - Academic support
 - Mentoring
- Work insertion support for graduated women.

Development stage



How to improve women's participation?

- Informative and motivational communicative actions specific to women
- Research

PURPOSE: strategy

To increase the enrollment women in STEM

In which STEM programs of your institution is the good practice mentioned above focused?

All academic program of the university: STEM

Código ISCED		
0512	Bioquímica	X
0532	Ciencias de la Tierra	X
0533	Física	X
0541	Matemática	X
0611	Uso de la computadora	X
0612	Diseño y administración de bases de datos y redes.	X
0613	Desarrollo y análisis de software y aplicaciones.	X
0711	Ingeniería Química y procesos	X
0712	Tecnología de protección del medio ambiente	X
0713	Electricidad y Energía	X
0714	Electrónica y automatización	X
0715	Mecánica y oficios de metales	X
0721	Procesamiento de alimentos	X
0722	Materiales (vidrio, papel, plástico y madera).	X
0731	Arquitectura y urbanismo.	X
0732	Construcción e ingeniería civil	X

Assigned Resources:

- Economical resources to develop research
- Printed and audiovisual materials: to increase the enrollment women
- Programs to reduce violence and discrimination against women:
Gender Equity Office
- Advances in institutional policies and regulations (HS)

EXAMPLE

Mailing tactics



Wstem

¡El TEC es para vos!

Conocé las **carreras del TEC** **opción TEC**

¡Descargá la aplicación oficial!

Google Play App Store

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de Costa Rica

¡El TEC celebra con vos por ser una de las mujeres admitidas en nuestras carreras!

- ▶ Programas y servicios de acompañamiento como mujer TEC para tu permanencia en la Institución
- ▶ Mujeres y hombres que se gradúan en el TEC consiguen trabajo más rápido que egresados de otras universidades
- ▶ Mujeres y hombres que se gradúan en el TEC son los mejores pagados del mercado laboral
- ▶ El aporte de las mujeres permite un enfoque más amplio a la ciencia y la tecnología

Te compartimos la historia de María Jesús Morales, graduada de una de nuestras carreras de ingeniería

Ver

¡Viví la experiencia de ser mujer TEC!

Comisión de atracción de mujeres a carreras de ingeniería, cam@tec.ac.cr

<https://youtu.be/xBFQbnQjMwo>



ENVIO A TRAVES DE LA PLATAFORMA MAIL CHIMP
DE INVITACION A MUJERES ADMITIDAS AL TEC 2019-2020

OFICINA DE COMUNICACION Y MERCADEO
MBA Carla Garita G.

Plataforma de mailing



MAIL CHIMP PERMITE TENER
ESTADISTICAS EN TIEMPO REAL
PARA TACTICAS DE MAILING



SIN EL USO DE PLATAFORMAS
ESPECIALIZADAS NO SE PODRIAN
MEDIR LOS RESULTADOS DE
CAMPAÑAS

TOTAL DE DESTINATARIOS, SEGÚN BASE DE DATOS



Campañas

Automatizar ▾

Audiencia

Plantillas

Informes

Estudio de contenido

Crear



Comunicación
Tecnológica de Costa Rica ▾

Ayuda



Mujeres Ingeniería

[Cambiar informe ▾](#)

[Visión de conjunto](#)

[Actividad ▾](#)

[Enlaces](#)

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[Comercio electrónico](#)

[Conversaciones](#)

[Analytics360](#)

1,082 destinatarios

Audiencia: Mujeres Ingeniería

Asunto: ¡El TEC es para vos!

Entregado: mié, 16 oct 2019 10:00 am

[Ver correo electrónico](#) · [Descargar](#) · [Imprimir](#) · [Compartir](#)

El envío se hizo mediante la cuenta de la Comisión

Feedback

APERTURAS DEL CORREO, CLIC Y REBOTES



Campañas Automatizar Audencia Plantillas **Informes** Estudio de contenido

Crear



Comunicación
Tecnológica de Costa Rica

Ayuda



envío e impuestos

Tasa de apertura



49.0%

Tasa de clics



19.7%

529

Abrió

213

Hizo clic

2

Rebotado

00

Darse de baja

Feedback

Recomendaciones

1. Hacer un nuevo envío a las 51% de mujeres que no abrieron el correo y evaluar estadísticas.

2. Hacer otro envío a las 49% de mujeres que sí lo abrieron, con otro mensaje que invite a concretar la decisión, de manera en que se pueda incidir en la misma.

-Concepto del mensaje propuesto: de pertenencia al estilo de “te queremos con nosotros” (esto es una referencia) y como segundo elemento que resalte un beneficio clave que le proporciona el TEC al estudiar aquí.

-Gráfica propuesta: línea juvenil ,no institucionalizada.

Recomendaciones

3. Una vez que se haya revisado las estadísticas de los nuevos envíos, hacer un filtro de aquellos perfiles que son de nuestro interés prioritario y hacer un “push” más personalizado, que puede ser por medio de ser llamadas, coordinadas con las carreras que seleccionaron.

Se recomienda hacer las llamadas con un speech definido previamente.

Sustainability

○ Strategy weakness:

- We don't have indicators yet
- Impact measurement has not been considered (long term)



Building the future of Latin America: engaging women into STEM (W-STEM)

**Affirmative actions for
mothers and fathers** |

#2

Goals

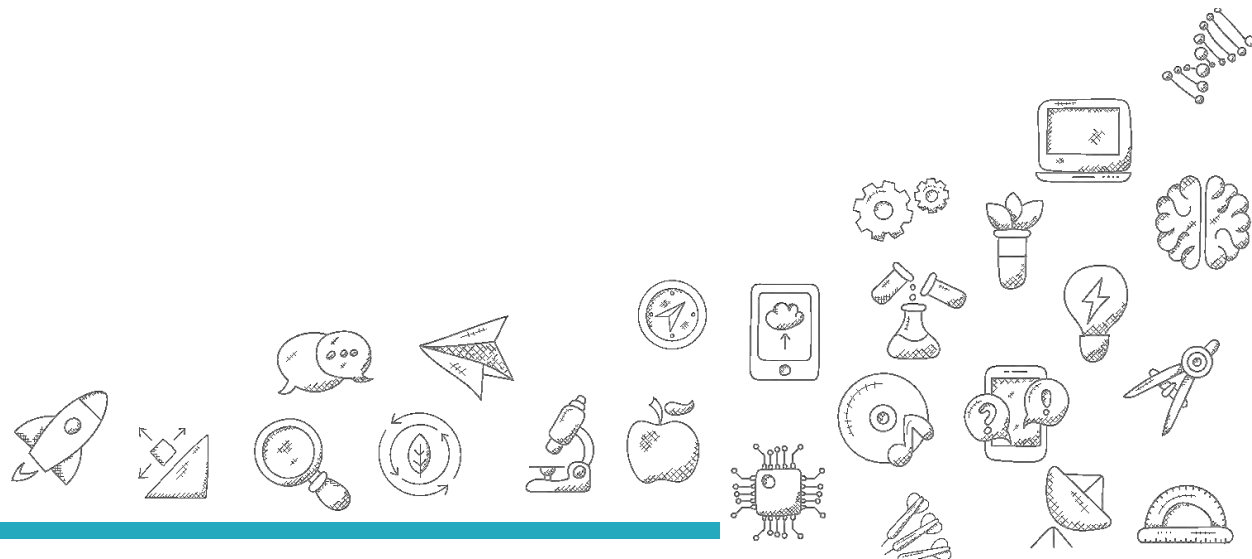
- Policies specific
- Interdepartmental commission
- Scholarship
- Mothers and fathers students association.
- Custom enrollment
- Nursery room
- Training fathers students



INFORMATION STRATEGIES

<https://www.tec.ac.cr/hoyeneltec/2018/03/01/asociacion-especial-respalda-madres-padres-estudiantes>

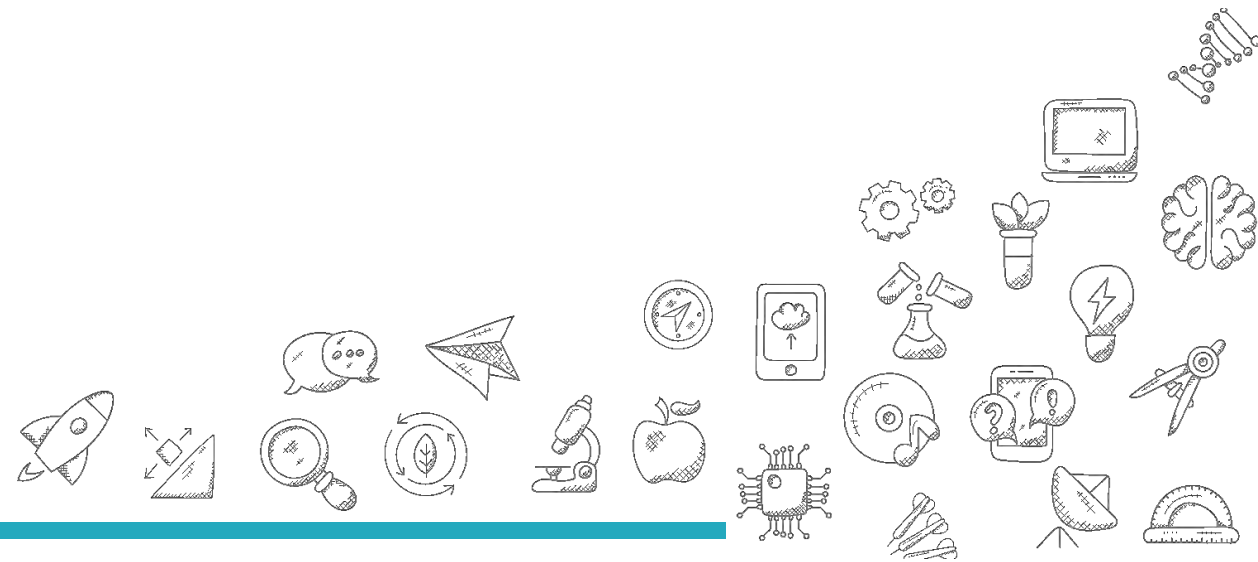
<https://www.tec.ac.cr/hoyeneltec/2017/02/23/sala-lactancia-confort-mas-pequenos-sus-madres-padres>





MEDIA EXAMPLE

<https://www.youtube.com/watch?v=yNEWEj9PvkU>



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