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

598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP

Co-funded by the
Erasmus+ Programme
of the European Union

D2.2.3. Informe sobre buenas prácticas en materia de estrategias y mecanismos

UNINORTE

Co-funded by the
Erasmus+ Programme
of the European Union

Historial de cambios

Versión	Revisión	Fecha	Autores	Modificación	DOI
1	0	16/12/2019	Uninorte		
2	0	08/01/2020	Uninorte	Los anexos se añaden al documento	
2	1	14/01/2020	USAL	Revisión	
2	2	09/07/2022	USAL	Revisión	10.5281/zenodo.6813779

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

Tabla de contenido

Introducción ***4***

Metodología / Preparación ***4***

Resumen de la primera ronda de benchmarking ***6***

Conclusiones ***9***

Referencias ***10***

Anexos ***12***

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

Introducción

La primera ronda de benchmarking de estrategias y mecanismos del proyecto W-STEM [1-17] tuvo lugar el pasado jueves 28 de noviembre de 2019 en las instalaciones de la Universidad del Norte (Barranquilla, Colombia) durante el W-STEM INTERNATIONAL LEADERSHIP SUMMIT.

Esta fue la primera de tres rondas de benchmarking; una segunda ronda tendrá lugar durante la segunda reunión del consorcio en México, después de las campañas de atracción y una tercera durante la reunión final en Chile, con la presentación de los resultados. El objetivo de estas es identificar políticas, procedimientos y mecanismos que sean considerados buenas prácticas de atracción, acceso y orientación de mujeres en programas de pregrado STEM de manera que otras instituciones puedan replicarlas. De igual manera, se deseaba que las prácticas presentadas sirvieran de inspiración para la elaboración del plan de acción de las instituciones.

Metodología / Preparación

Uninorte como “partner” encargado de la organización de la primera ronda de “benchmarking” preparó un cuestionario para la recolección de las buenas prácticas en las áreas de acceso, atracción, retención u orientación de las mujeres en carreras STEM de las universidades pertenecientes al consorcio (anexo 1). La metodología usada fue inspirada en la usada por Columbus para sus rondas de benchmarking, la cual ha venido siendo usada con éxito por dicha asociación desde 2009. Este ejercicio ha permitido que las instituciones participantes de los clubes de benchmarking organizados por ellos puedan identificar sus fortalezas y debilidades en comparación con otras universidades, sentando las bases para la mejora y la colaboración entre instituciones.

Al diseñar el cuestionario se tomó como referente el usado por Columbus y la Universidad del Norte para el U-Benchmarking Club realizado entre 2017 y 2018. Este contemplaba más ejes que la ronda a realizar para el Proyecto W-STEM por lo cual las preguntas debieron ser ligeramente modificadas y algunas eliminadas con el objetivo de ajustarlo lo mejor posible al contexto del proyecto y de la ronda como tal. Los tres ejes que se mantuvieron fueron: atracción de mujeres a programas STEM, reclutamiento y acceso de mujeres a programas STEM y retención y empoderamiento del talento durante el entrenamiento en STEM. Se pidió a los “partners” presentar no solamente las experiencias de éxito sino cualquiera de la cual fuese posible aprender y crear redes de aprendizaje colaborativo.

El formulario se compone de cuatro secciones: descripción de la buena práctica, estrategias y políticas institucionales, implementación y sostenibilidad y, por último, mejoras a futuro. La primera sección buscaba conocer el tipo de práctica de la que se estaba hablando y los objetivos que se esperaban lograr; la segunda sección buscaba conocer si la práctica era resultado de alguna política o estrategia institucional, en caso de así ser de qué manera contribuía a la consecución de dichas metas y por último con qué recursos se contaba; la tercera sección buscaba conocer la manera en que se mide el éxito de la práctica así como los resultados obtenidos en término de aprendizaje y mejora; por último, se quería saber de qué manera se visiona la práctica en el futuro y qué acciones se planean llevar a cabo para superar los posibles obstáculos.

Este cuestionario así como el documento diligenciado con la buena práctica de Uninorte fueron entregados al consorcio en la sexta semana previa al W-STEM INTERNATIONAL LEADERSHIP

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

SUMMIT para su compleción y entrega. Durante las semanas siguientes los miembros del equipo Uninorte estuvieron monitoreando a los "partners" para ofrecerles asesoría en caso de necesitarla.

La fecha esperada inicial para la entrega era 3 de noviembre, con la intención de tener suficiente tiempo para revisar cuidadosamente el material entregado por las instituciones y elegir a aquellas más estructuradas para su presentación a los líderes durante el bloque de Cartagena del W-STEM INTERNATIONAL LEADERSHIP SUMMIT, las demás serían expuestas durante la ronda de benchmarking. No obstante, al llegar la fecha límite, los "partners" manifestaron necesitar más tiempo por lo cual esta se fue extendiendo hasta poder recolectar el mayor número de prácticas posibles. Dos semanas antes del SUMMIT, se eligieron tres prácticas entre las que habían sido entregadas hasta ese momento.

De manera simultánea, se empezó a recolectar el mapeo de procesos internos. Para integrar los procesos, se sugirió a los "partners" buscar entre los procesos mapeados alguno que se pudiese considerar como una buena práctica y con base en la información allí plasmada, completar el cuestionario de "benchmarking".

De las prácticas entregadas, tres se eligieron para su presentación durante el bloque de Cartagena del W-STEM INTERNATIONAL LEADERSHIP SUMMIT (Universidad de Oulu, Politecnico di Torino y Northern Regional College), aprovechando la presencia de líderes institucionales de las universidades del consorcio, razón por la cual no hicieron parte de la ronda de benchmarking y no se incluyen en este informe. Las nueve prácticas restantes fueron presentadas durante el bloque de Barranquilla y contaron con veinte minutos y luego diez minutos para preguntas de los espectadores; tres universidades decidieron no entregar una buena práctica ante la consideración de no haber encontrado una en sus respectivas instituciones.

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

Resumen de la primera ronda de benchmarking

Universidad del Norte: Grupo estudiantil W-STEM (anexo 2)
El Grupo Estudiantil W-STEM Uninorte es una comunidad estudiantil fundada en el verano de 2019 como mecanismo de atracción y retención de mujeres jóvenes en los campos STEM. Los principales objetivos de este grupo son: 1. Crear un canal físico de difusión para el proyecto W-STEM 2. Atraer a las mujeres jóvenes a las carreras de STEM 3. Proporcionar información pertinente sobre las carreras de STEM a las jóvenes en las escuelas secundarias 4. Sensibilizar a la comunidad sobre la importancia de la equidad de género en los campos STEM. Las actividades de interés del grupo incluirán: campañas de atracción en escuelas secundarias; semilleros de robótica, programación y análisis de datos para estudiantes universitarias y de escuelas secundarias; conferencias con modelos de rol locales/nacionales/internacionales; programas de tutoría para estudiantes universitarias y escolares con ex alumnas y profesoras; y también actividades en las que las estudiantes universitarios puedan compartir sus experiencias como estudiantes STEM con las chicas de las escuelas secundarias.

Technological University Dublin: INGENICS (anexo 3)
TU Dublín presenta INGENICS, una plataforma nacional, como una forma de reclutar estudiantes y personal femenino para retenerlos en sus carreras. Con la ayuda de INGENICS y el gobierno se creó una plataforma para lograr una masa crítica a nivel nacional; explicar los objetivos de los esfuerzos y la identidad para el equilibrio de género y la igualdad de género en las carreras de las TIC influyendo en las políticas gubernamentales.

Universidad de Guadalajara: atracción de mujeres a carreras STEM (anexo 4)
Han puesto en práctica estrategias como las profesiones de la Expo, las visitas a escuelas secundarias, las ferias de ciencias y las chicas de la tecnología para motivar y promover las ciencias exactas y la ingeniería. El principal resultado logrado con estas estrategias es un aumento gradual de las niñas en las carreras STEM a lo largo de los años utilizando indicadores como la demanda, los ingresos y las estadísticas de fin de carrera.

Universidad Tecnológica de Bolívar: servicio de guardería (anexo 5)
Estrategia creada para estudiantes y empleados que tienen hijos y no tienen una persona que los cuide. A partir de 2012, el servicio está disponible para niños de 18 meses a 5 años. Es gratuito para los estudiantes y empleados. Se contrataron maestros y psicólogos para cuidar a los niños en las instalaciones de la universidad, todo esto porque la paternidad es una causa común de abandono de las escuelas y universidades. Otras estrategias aplicadas en la UTB son los programas "Mujeres UTB en la ciencia", "Programación para niñas", "Ciencia ciudadana para niñas".

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

Universidad de Costa Rica: proyecto mujeres en ingeniería (anexo 6)
Programa para atraer a estudiantes femeninas a las áreas de ingeniería, dirigido por cinco profesoras de la facultad de ingeniería. El programa se aplica a los estudiantes de la escuela primaria para concienciar y eliminar los estereotipos desde edades tempranas, en la escuela secundaria con el fin de mantenerlos informados de las áreas de ingeniería para que puedan elegir una carrera con criterio. Con actividades como el "Café con las ingenieras" la UCR trata de concienciar a la sociedad acerca de las mujeres en la ingeniería.

Universidad técnica particular de Loja: mentores para W-STEM (anexo 7)
Este programa proporciona acompañamiento a las estudiantes de nuevo ingreso de ingeniería civil, geología y minería. El proyecto fue desarrollado por 7 profesoras de ingeniería y 2 directoras de carrera. Las nuevas estudiantes se sintieron sin miedo y apoyadas. El proyecto permite retener a las estudiantes de nuevos ingresos en ingeniería. Utilizando charlas como "Mujer e ingeniera" y un proyecto de robótica creativa que se aplicó a los niños, UTPL trata de aumentar los ingresos de las estudiantes.

Universidad Técnica del Norte: FICA STEM (anexo 8)
Este programa aborda la atracción y la retención de mujeres en STEM. La idea es apoyar a las estudiantes que ya están estudiando una carrera y atraer a las mujeres a diferentes carreras. Una de las barreras encontradas es que la universidad no puede controlar directamente las estrategias de atracción de las mujeres para inscribirse en las carreras STEM.

Universidad de Salamanca: Unidad de Cultura Científica y de la Innovación (UCC+i) (anexo 9)
La UCC+i realiza un programa anual de eventos y programas para integrar a las mujeres en las especialidades STEM. Cuenta con un bajo presupuesto para cada año académico, pero además, la universidad proporciona espacios de reserva, compromiso de los participantes en los eventos, contacto con partes interesadas externas y búsqueda de oradores. Al abrirla a toda la comunidad (tanto adultos como jóvenes) buscan la sostenibilidad. En el marco del proyecto utilizan los espacios para obtener reconocimiento haciendo actividades como: "niñas y mujeres en las ciencias" que proporcionan espacios para citas rápidas con investigadores, charlas en las escuelas, desayunos con un profesor; también "primavera científica" que se celebra durante el mes de mayo. Con estos eventos, se muestra el apoyo dentro de la unidad.

Instituto tecnológico de Costa Rica: mecanismos y políticas (anexo 10)
Cada especialidad de esta universidad es un programa STEM. El cuerpo estudiantil tiene un promedio de 66% de hombres y 34% de mujeres, los profesores 68% de hombres y 32% de mujeres. Hay dos prácticas generales que se aplican en toda la universidad, y una específica que se aplica en la escuela de ingeniería informática. • Comisión Interinstitucional, para ayudar a la atracción y retención de mujeres en la ingeniería. Esta comisión tiene como objetivo aumentar la matrícula, la retención (espacio libre de violencia mediante la creación de una oficina de equidad de género, apoyo académico, tutoría) y también la inserción laboral de mujeres en la ITCR. Se llevan a cabo acciones comunicativas informativas y motivacionales (como material impreso y audiovisual), con el fin de aumentar la participación de las mujeres en las carreras de STEM y también mediante la realización de investigaciones sobre estrategias para mejorar la inscripción de las mujeres en los programas de tronco.

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

- Acciones afirmativas para padres y alumnos.
- Comisiones interdepartamentales
- Becas.
- Salas de guardería.
- Asociación de padres y madres.
- Políticas institucionalizadas.

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

Conclusiones

La primera ronda de benchmarking del Proyecto W-STEM tuvo como objetivo conocer las buenas prácticas de las universidades pertenecientes al consorcio en las áreas de acceso, atracción, retención u orientación de las mujeres en las carreras STEM de las mismas. Esta se llevó a cabo el jueves 28 de noviembre de 2019 en las instalaciones de la Universidad del Norte (Barranquilla, Colombia). Un total de nueve universidades (siete latinas y dos europeas) presentaron sus buenas prácticas durante esta sesión, mientras que otras tres (todas europeas) las presentaron durante el bloque de Cartagena a manera de presentación para los líderes universitarios, por lo cual no hicieron parte de la ronda de benchmarking. Tres universidades (todas latinas) expresaron no tener buenas prácticas en estas áreas por lo cual prefirieron no presentar.

De lo presentado por las universidades europeas se identifica que, aunque las estadísticas no difieren mucho en comparación a las universidades latinoamericanas, existen avances significativos con respecto a las áreas previamente mencionadas e incluso existen políticas gubernamentales que apoyan estas iniciativas y acciones, que llevan un recorrido mucho mayor al de las universidades latinas.

Por otro lado, se detecta en las universidades latinas una fortaleza en cuanto a las iniciativas de las universidades aunque existe la desventaja de que, mayormente, son acciones aisladas y localizadas en las universidades antes que en la ciudad, país o región. Como aspecto positivo se logra destacar que en su mayoría son acciones replicables en los diferentes contextos, siempre y cuando se cuente con apoyo institucional. Se hace entonces importante obtener el apoyo y compromiso de los líderes institucionales, de manera que siendo aliados estratégicos permitan la implementación de más iniciativas, así como brindarles el soporte económico necesario. Esto se puede lograr a través de la sensibilización acerca de la problemática y los beneficios que puede traer para la institución, la ciudad, la región y el país el incremento de la población de mujeres en las áreas STEM. Para el apoyo económico también es posible recurrir a la búsqueda de aliados estratégicos empresariales.

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

Referencias

[1] F. J. García-Peñalvo, "Women and STEM disciplines in Latin America: The W-STEM European Project," *Journal of Information Technology Research,* vol. 12, no. 4, pp. v-viii, 2019.

[2] F. J. García-Peñalvo, "W-STEM Project Overview," presentado en W-STEM Erasmus+ project Kick-Off, Salamanca, Spain, March 25-27, 2019, 2019. Disponible: https://goo.gl/19vjtx. doi: 10.5281/zenodo.2605431.

[3] A. García-Holgado, "Proyecto europeo W-STEM," Universidad Nacional San Agustín de Arequipa, Perú, 2019. Disponible: https://zenodo.org/record/3531553. doi: 10.5281/zenodo.3531553.

[4] A. García-Holgado, A. Camacho Díaz y F. J. García-Peñalvo, "Engaging women into STEM in Latin America: W-STEM project," en *TEEM'19 Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (Leon, Spain, October 16th-18th, 2019)*, M. Á. Conde-González, F. J. Rodríguez-Sedano, C. Fernández-Llamas y F. J. García-Peñalvo, Eds. ICPS: ACM International Conference Proceedings Series, pp. 232-239, New York, NY, USA: ACM, 2019. doi: 10.1145/3362789.3362902.

[5] F. J. García-Peñalvo, "Innovative Teaching Approaches to attract, engage, and maintain women in STEM: W-STEM project," presentado en Coimbra Group Seminar. Innovation in Learning and Teaching in Science, Technology, Engineering and Mathematics (STEM) fields, Granada, Spain, 14 November 2019, 2019. Disponible: https://bit.ly/2NWGFyA. doi: 10.5281/zenodo.3538939.

[6] A. Camacho Díaz y F. J. García-Peñalvo, "W-STEM Project overview at the International Leadership Summit," presentado en W-STEM International Leadership Summit, Cartagena de Indias, Colombia, November 25th, 2019. Disponible: https://bit.ly/2XIN5pL. doi: 10.5281/zenodo.3552377.

[7] F. J. García-Peñalvo, A. Bello, Á. Domínguez y R. Romero Chacón, "W-STEM International Leadership Summit World Café Report," W-STEM Consortium, Brussels, Belgium, Technical Report, 2019. Disponible en: https://bit.ly/2RMAHUy. doi: 10.5281/zenodo.3575091.

[8] A. García-Holgado, S. Verdugo-Castro, M. C. Sánchez-Gómez y F. J. García-Peñalvo, "Facilitating Access to the Role Models of Women in STEM: W-STEM Mobile App," en *Learning and Collaboration Technologies. Design, Experiences. 7th International Conference, LCT 2020, Held as Part of the 22nd HCI International Conference, HCII 2020, Copenhagen, Denmark, July 19–24, 2020, Proceedings, Part I*, P. Zaphiris y A. Ioannou, Eds. Lecture Notes in Computer Science, no. 12205, pp. 466-476, Cham, Switzerland: Springer Nature, 2020. doi: 10.1007/978-3-030-50513-4_35.

[9] F. J. García-Peñalvo, "A brief presentation of W-STEM project: Main goals, results and current status," presentado en 2021 Cluster Meeting Erasmus+ CBHE projects in Latin America & Caribbean: Building Capacity and Promoting Cooperation in Higher Education, Brussels, Belgium, October 29, 2021. Disponible: https://zenodo.org/record/5613248. doi: 10.5281/zenodo.5613248.

[10] A. García-Holgado y F. J. García-Peñalvo, "El Proyecto W-STEM y la Mujer en la Ciencia," presentado en Encuentro Internacional de Investigación e Innovación en Ciencias Básicas, Universidad Autónoma de Bucaramanga (Colombia), 11 de noviembre, 2021. Disponible: https://bit.ly/3omI9V1. doi: 10.5281/zenodo.5675815.

[11] S. Verdugo-Castro, A. García-Holgado, M. C. Sánchez-Gómez y F. J. García-Peñalvo, "Multimedia Analysis of Spanish Female Role Models in Science, Technology, Engineering and Mathematics," *Sustainability,* vol. 13, no. 22, art. 12612, 2021. doi: 10.3390/su132212612.

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

[12] F. J. García-Peñalvo, A. Bello, A. Dominguez y R. M. Romero Chacón, "Gender Balance Actions, Policies and Strategies for STEM: Results from a World Café Conversation," *Education in the Knowledge Society,* vol. 20, art. 31, pp. 31-1 – 31-15, 2019. doi: 10.14201/eks2019_20_a31.

[13] F. J. García-Peñalvo, A. García-Holgado, A. Dominguez y J. Pascual Eds., "Women in STEM in Higher Education. Good Practices of Attraction, Access and Retainment in Higher Education," Lecture Notes in Educational Technology (LNET) Singapore: Springer Singapore, 2022. doi: 10.1007/978-981-19-1552-9.

[14] A. García-Holgado y F. J. García-Peñalvo, "A Model for Bridging the Gender Gap in STEM in Higher Education Institutions," en *Women in STEM in Higher Education. Good Practices of Attraction, Access and Retainment in Higher Education*, F. J. García-Peñalvo, A. García-Holgado, A. Dominguez y J. Pascual, Eds. Lecture Notes in Educational Technology (LNET), pp. 1-19, Singapore: Springer Singapore, 2022. doi: 10.1007/978-981-19-1552-9_1.

[15] A. García-Holgado *et al.*, "Estudio piloto sobre la percepción de la brecha de género en estudios de ingeniería informática," en *Actas del V Congreso Internacional sobre Aprendizaje, Innovación y Competitividad. CINAIC 2019 (9-11 de Octubre de 2019, Madrid, España)*, M. L. Sein-Echaluce Lacleta, Á. Fidalgo-Blanco y F. J. García-Peñalvo, Eds. pp. 698-703, Zaragoza, Spain: Servicio de Publicaciones Universidad de Zaragoza, 2019. doi: 10.26754/CINAIC.2019.0142.

[16] A. García-Holgado, A. Camacho Díaz y F. J. García-Peñalvo, "La brecha de género en el sector STEM en América Latina: Una propuesta europea," en *Actas del V Congreso Internacional sobre Aprendizaje, Innovación y Competitividad. CINAIC 2019 (9-11 de Octubre de 2019, Madrid, España)*, M. L. Sein-Echaluce Lacleta, Á. Fidalgo-Blanco y F. J. García-Peñalvo, Eds. pp. 704-709, Zaragoza, Spain: Servicio de Publicaciones Universidad de Zaragoza, 2019. doi: 10.26754/CINAIC.2019.0143.

[17] F. J. García-Peñalvo, A. Bello, Á. Domínguez y R. Romero Chacón, "Informe del W-STEM International Leadership Summit World Café. Cartagena de Indias, Colombia, 26 de noviembre de 2019," W-STEM Consortium, Brussels, Belgium, Technical Report, 2020. Disponible en: https://bit.ly/2Yp7DEg. doi: 10.5281/zenodo.3892829.

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

Anexos

This project (Project number: 598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP) has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the Erasmus+ Programme of the European Union

598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP

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.

Co-funded by the Erasmus+ Programme of the European Union

598923-EPP-1-2018-1-ES-EPPKA2-CBHE-JP

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)?

Select the stage with an X	
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	

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	

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.

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?

ANEXO 2

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)?

Select the stage with an X	
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

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.

ANEXO 3

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)?

Select the stage with an X	
Creation / design / planning	
Development / Application / Execution	
Tracking / Control / Evaluation	
Other: Ongoing	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 intiatives 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

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	?

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 intiatives 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 initiaatives 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 committes 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 initiaitves.

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 nework 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 ecently 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 if time and resources to run such initiaitves 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 initiaitves 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 estalblishes itself as a valuable national resource over its three year history.

ANEXO 4

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
Contact e-mail	veronica.rbetancourtt@academicos.udg.mx;

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)?

Select the stage with an X	
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	

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.

ANEXO 5

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
Contact e-mail	scontreras@utb.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	
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)?

Select the stage with an X	
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

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-appropiate 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?

ANEXO 6

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
Contact e-mail	Evelynmaria.salas@ucr.ac.cr

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	

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 Headquartes 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-Rectory 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 insuficient resources provided by the University
-The lack of committment 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-Rectory 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.

ANEXO 7

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
Contact e-mail	spcueva@utpl.edu.ec

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)?

Select the stage with an X	
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	

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.

.

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?

ANEXO 8

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
Contact e-mail	wstem_ecuador@utn.edu.ec

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 sutdent 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)?

Select the stage with an X	
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	

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 lectueres, 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 satisfation 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 satisfation 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 couching 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.

ANEXO 9

Unidad de Cultura Científica y de la Innovación (UCC+i)
Scientific Culture and Innovation Unit

Dra. Alicia García-Holgado

GRIAL Research Group
Computer Science Department
Research Institute for Education Science
University of Salamanca

aliciagh@usal.es | @aliciagh_

Dr. Francisco José García-Peñalvo

GRIAL Research Group
Computer Science Department
Research Institute for Education Science
University of Salamanca

fgarcia@usal.es | @frangp

Wstem

GRIAL Research Group University of Salamanca

VNiVERSiDAD D 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 prooposals and select those 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

https://culturacientifica.usal.es

VNiVERSiDAD Đ 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)

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein

Co-funded by the
Erasmus+ Programme
of the European Union

Wstem

Universidad de Guadalajara

Politecnico di Torino

Universidad de Costa Rica

UTPL

Universidad Tecnológica de Bolívar

Universidad del Norte

Universidad de Salamanca

Dublin Technological University

Northern Regional College

Tecnológico de Monterrey

Pontificia Universidad Católica de Valparaíso

University of Oulu

Universidad Tecnica Federico Santa Maria

TEC Tecnológico de Costa Rica

Good practices

Laura Queralt

María Estrada

TEC | Tecnológico de Costa Rica

ITCR

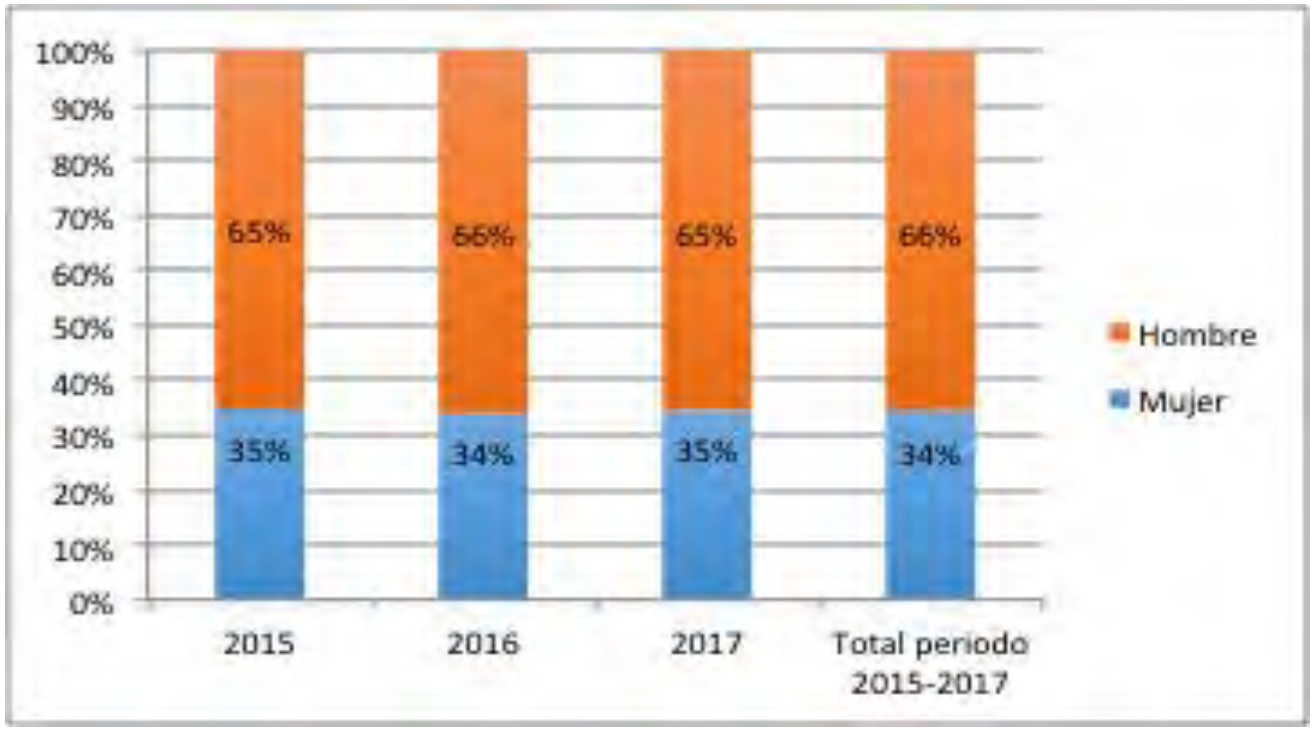
TEC | Tecnológico de Costa Rica

Wstem

STEM- ACADEMIC PROGRAMS

TEC | Tecnológico de Costa Rica

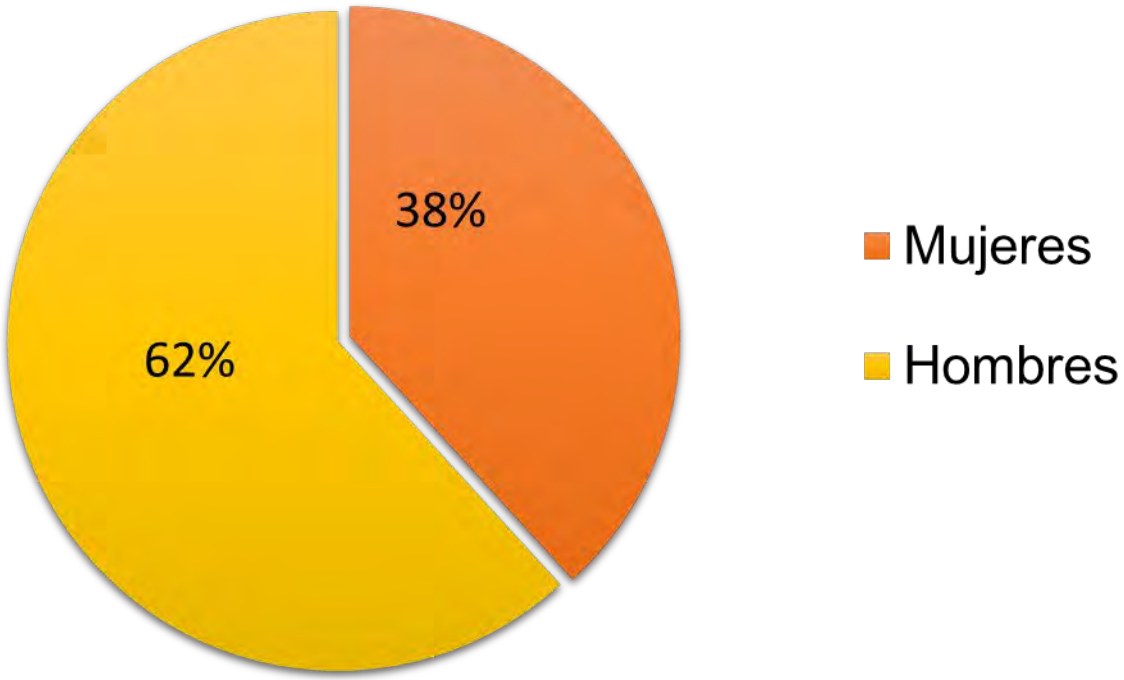
Students



TEC | Tecnológico de Costa Rica

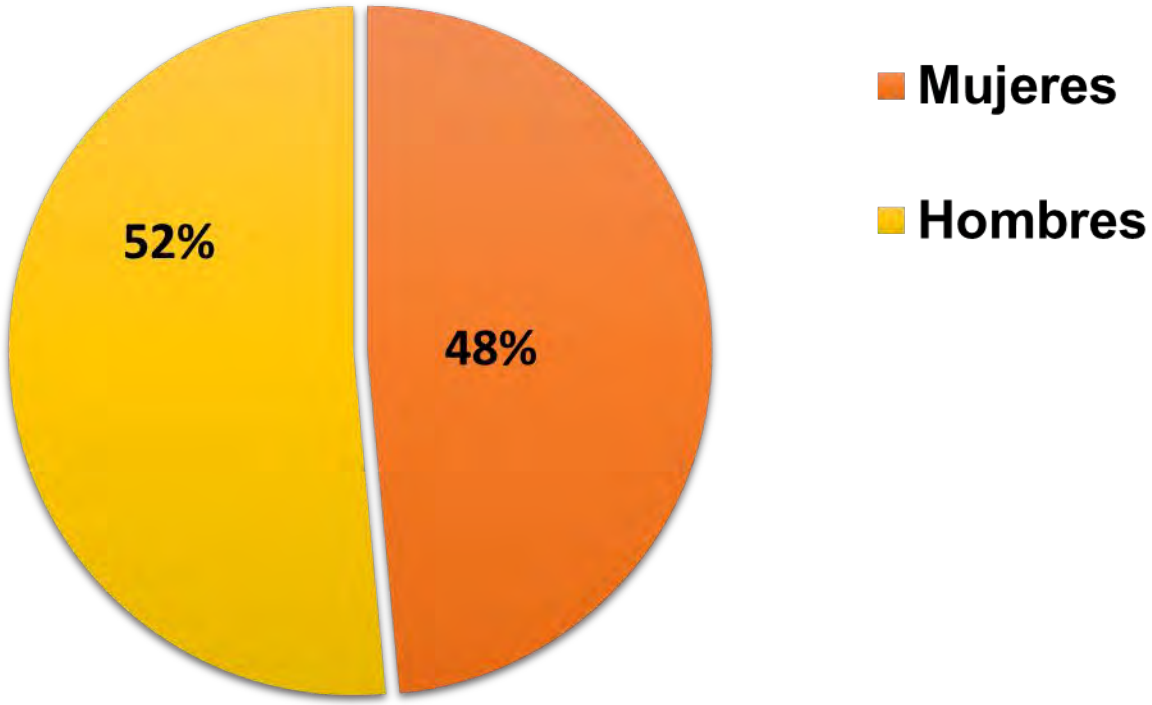
Human Resources

Gráfico 1. Personal del ITCR según sexo



Administrative Staff

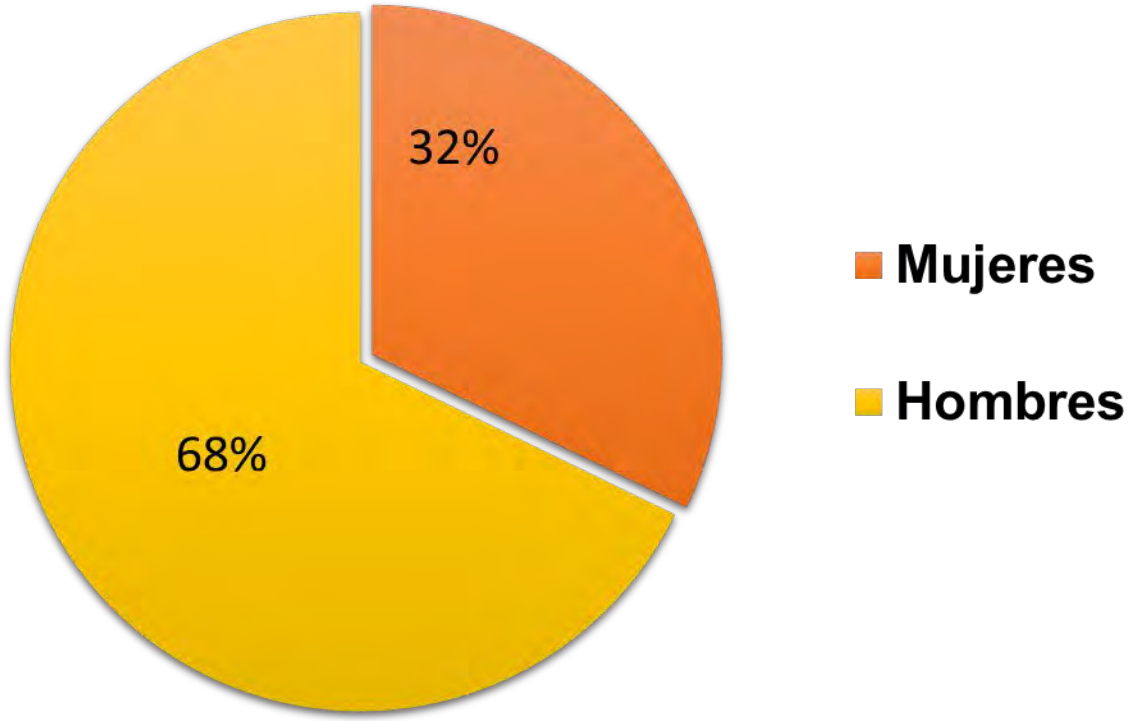
Gráfico 2. Personal administrativo según sexo



Fuente: Elaboración: “Estudio de Brechas de Género, 2015-2017.
Datos de Origen: Sistema de información de la Oficina de Planificación Institucional (OPI).

Academic Staff

Gráfico 3. Personal docente según sexo



Fuente: Elaboración: “Estudio de Brechas de Género, 2015-2017.
Datos de Origen: Sistema de información de la Oficina de Planificación Institucional (OPI).

WE CHOSE THREE GOOD PRACTICES

Generals (2)

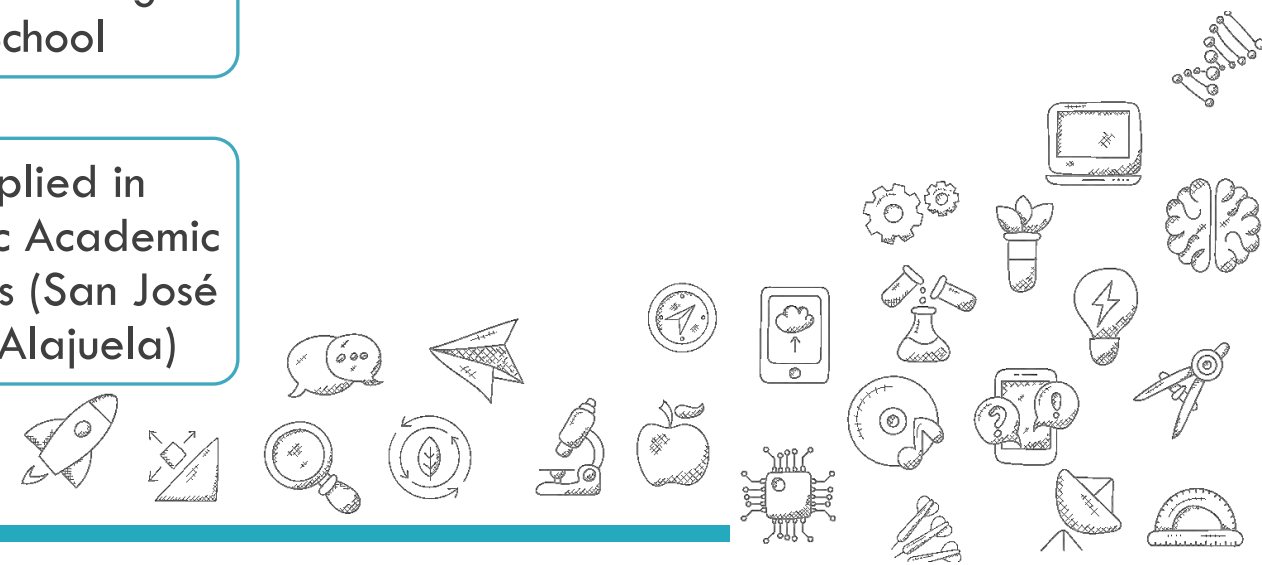
Institutional level

- With inter-departmental participation
- Supported by formal structures of the University

Specific (1)

In a specific area and/or moment

- Supported by Computer Engineering School
- Applied in specific Academic Centers (San José and Alajuela)



Wstem

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

Interdepartmental commission

#1

TEC | Tecnológico de Costa Rica

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

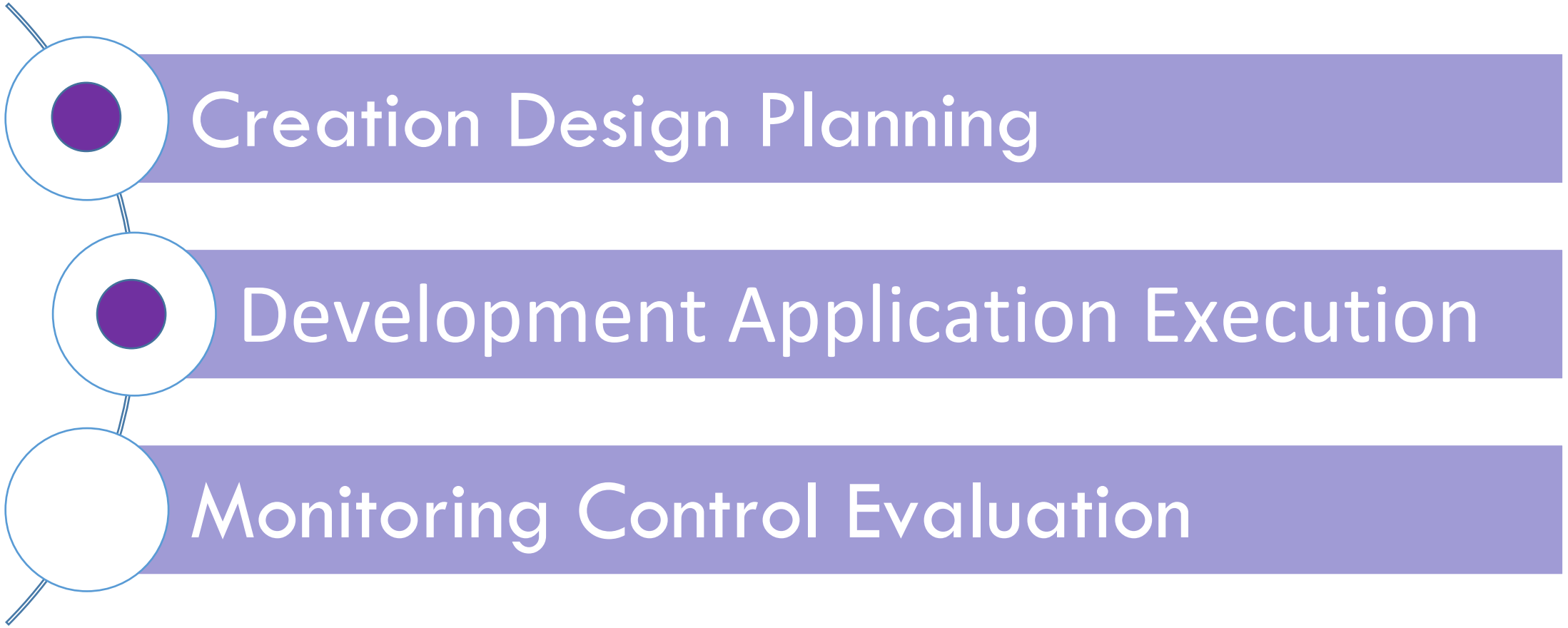
Linking Office

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

TEC | Tecnológico 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, ***cami@tec.ac.cr***

https://youtu.be/xBFQbnQjMwo

TEC | Tecnológico de Costa Rica

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

El envío se hizo mediante la cuenta de la Comisión

APERTURAS DEL CORREO, CLIC Y REBOTES

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 decision, 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

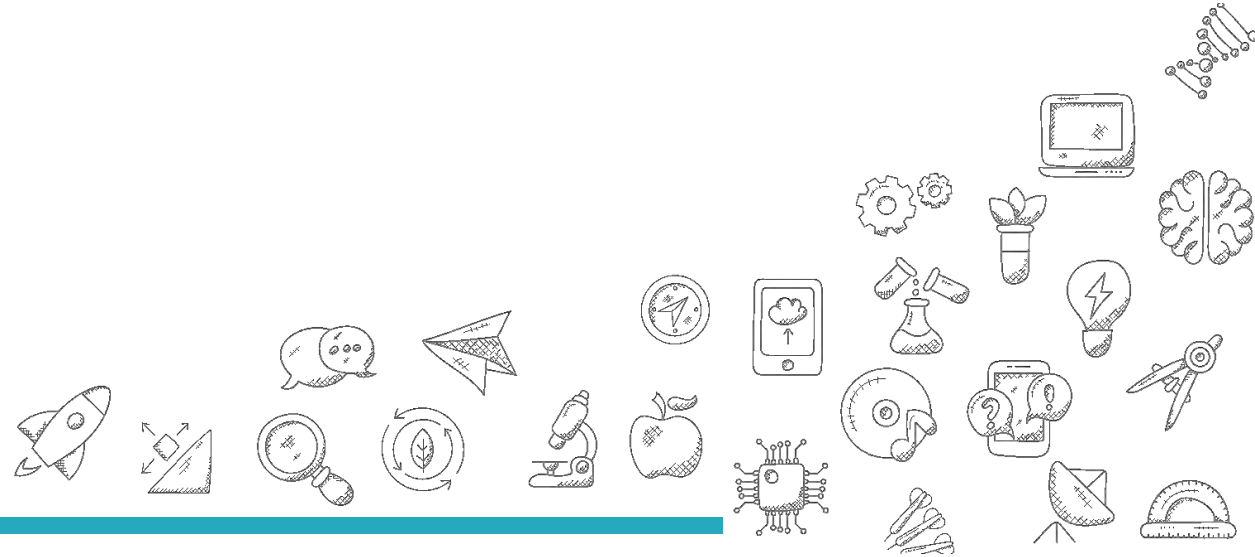
Goals

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

INFORMATION STRATEGIES

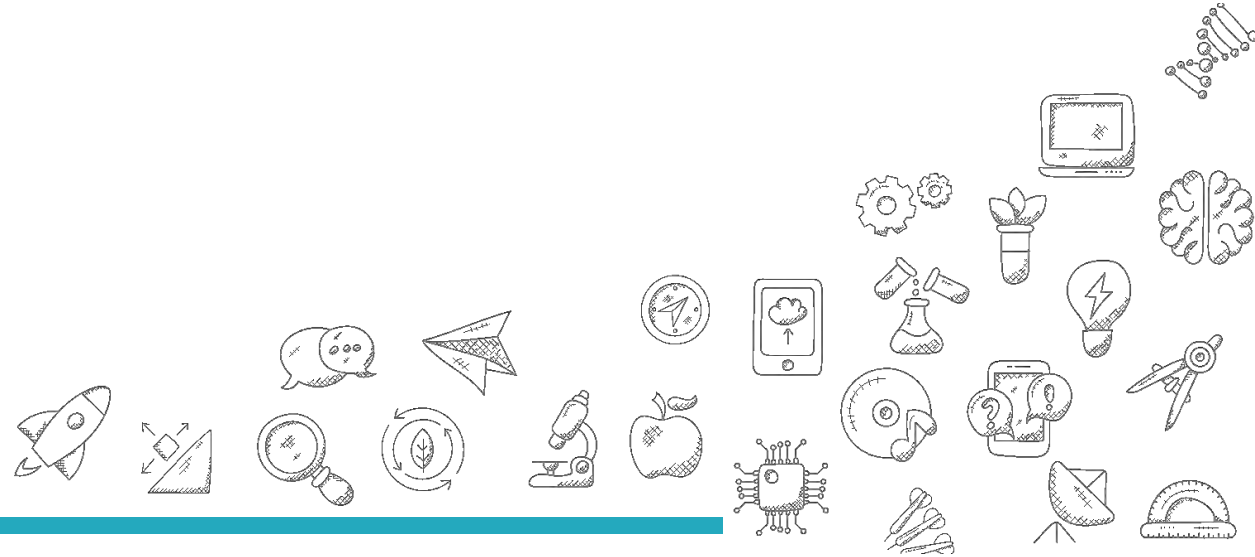
https://www.tec.ac.cr/hoyeneltec/2018/03/01/asociacion-especial-respalda-madres-padres-estudian-tec

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



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)

The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein

Co-funded by the
Erasmus+ Programme
of the European Union

Wstem

Universidad de Guadalajara

Politecnico di Torino

Universidad de Costa Rica

UTPL

Universidad Tecnológica de Bolívar

Universidad del Norte

Universidad de Salamanca

Dublin Technological University

Northern Regional College

Tecnológico de Monterrey

Pontificia Universidad Católica de Valparaíso

University of Oulu

Universidad Tecnica Federico Santa Maria

TEC Tecnológico de Costa Rica