CMS International Masterclasses in Mexico

International Conference on High Energy Physics 2022

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In Memoriam: Salvador Carrillo

We are grateful for all he did to advance International Masterclasses in Mexico and around the world.
What is a masterclass?
“Particle physicist for a day”
  • Intro
  • Tour
  • Analyze authentic HEP data.
  • Videoconference

International Masterclasses
  • > 50 Countries
  • > 10⁴ Students
  • 5 institutes in Mexico
  • All connect to Fermilab Videocon
  • Numbers were down in 2020-22

After the pandemic, IMC is on the rebound.

Cecire, APS April 2020
Masterclass Institutes

Universidad de Sonora
Universidad de Queretaro
Universidad de Colima
Universidad Iberoamericana
Benemérita Universidad Autónoma de Puebla
International Masterclasses

- International Masterclasses are helping to make frontier science available to young students and teachers that otherwise would not have this opportunity.
- The larger audience is mainly high school students and teachers.
- QuarkNet collaborates with around 10 CMS Mexican scientists that participate regularly in masterclasses (contacting the teachers, planning the event, helping the students to analyze the data).
- Several high school teachers in different institutions in Mexico participate annually and help advertise the events in their local areas.
- Thanks to these collaborations, it was possible to continue with some events during the pandemic, which was appreciated by the students and teachers.
Limited teacher survey: students like masterclasses

Califica esta afirmación: A mis alumnos y alumnas les gustó el Masterclass (5 significa que les gustó mucho y 1 significa que no).

8 responses

Translation: Evaluate this statement: My students liked the masterclass (5=very much, 1=no).
Limited teacher survey: students appreciate physics more

Califica esta afirmación: Mis alumnos y alumnas incrementaron su interés en física gracias al Masterclass (5 significa que concuerdo y 1 significa que no).

8 responses

Translation: Evaluate this statement: My students’ interest in physics increased thanks to the masterclass (5=agree, 1=no).
Limited teacher survey: teachers develop professionally

Califica esta afirmación: El Masterclass me ayudó en mi desarrollo profesional en pedagogía o física (5 significa que ayudó mucho y 1 significa que no).

8 responses

Translation: Evaluate this statement: The masterclass helped my professional development in teaching skills or physics (5=helped very much, 1=no).
Limited teacher survey: favorite and least favorite parts

¿Cuál fue la mejor parte del Masterclass?
8 responses

- Lecturas (37.5%)
- Medida de los datos (12.5%)
- Videoconferencia (12.5%)
- Interacciones de alumnos y alumnas con científicos (37.5%)

Translation: What was the best part of the masterclass?
- Lectures
- Data measurements
- Video conference
- Interactions between students and scientists

¿Cuál fue la parte del Masterclass que podría mejorarse?
8 responses

- Lecturas (37.5%)
- Medida de los datos (12.5%)
- Videoconferencia (12.5%)
- Interacciones de alumnos y alumnas con científicos (37.5%)
- La disponibilidad de equipo. La última ocasión los jóvenes tuvieron que llevar su computadora y algunos equipos no fueron adecuados para las mediciones.

Translation: What part of the masterclass could be improved?
- Lectures
- Data measurements
- Video conference
- Interactions between students and scientists
- Availability of equipment.

The last time the students had to bring their own computers, and some were not adequate for the analysis.
Conclusions

• Results have been positive and encouraging.
• Plans to work within a protocol to determine the reach and effectiveness of the activities in a more standardized way.
• Maintain statistics and collect feedback from teachers and students to improve activities.
• When data is available through teachers and schools, track students that were inspired from a masterclass to pursue a career in science.
• Although the program focuses on high school students, it is having a great impact on teachers (consider training activities for them as well?).