

Amusement parks support physics education?

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Applications of important physics principles abound in amusement parks. The rides invite inspiring and challenging discussions with students. Teachers can make use of these opportunities in organized forms and a number of amusement parks have found different ways to support teachers in their work. Educational projects and initiatives have arisen independently in many different places. How can we share experiences, ideas and material to support the educational use of amusement parks?

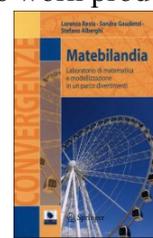
That was the focus of a small European meeting at Mirabilandia, park representatives, teachers, teacher educators, researchers and consultants got together to discuss different approaches (edupark.it). Previous experiences of the participants spanned many different formats from small surcharges for class visits tutored by park employees (Thorpe and Mirabilandia), to very low prices for independent class visits during ordinary opening hours in low season (Tivoli Gardens and Bakken, Denmark) or exclusive opening hours for experiments in rides during "Edutainment days" or "Science days" (Gröna Lund and Liseberg, Sweden).



Meeting attendees and Mirabilandia Park friends: Back row (from left): Giovanni Pezzi, Ulrik Lundby Hansen, Johan Lotsander, Mirabilandia Mascot 8, Angelo Lisoni, Alessandro Foschi, Giorgio Haeusermann, Mirabilandia Mascot Mike; Ann-Marie Pendrill, Barbara Pecori. Sitting: Stefano Alberghi, Andreas Theve, Barbara Melano, Chris Chedzey, Sandra Gaudenzi, Lorenza Resta

After a welcome by the main organizer, Giovanni Pezzi, and park representatives, Ann-Marie Pendrill gave an introductory talk with a background description of the development in Liseberg, from early development of student tasks and tutored visits, over a few large scale science days with students involved as assistants close to the rides, to a format with more responsibility to the teachers. She also introduced a discussion of the roles and responsibilities of the different actors: parks, schools and higher education.

Ulrik Lundby Hansen discussed "What's in it for the parks" and presented his work producing education packets for a few Danish parks.



The math high-school teachers from Modena, Lorenza Resta, Stefano Alberghi and Sandra Gaudenzi, math high school teachers, demonstrated mathematical machines and how they used them during tutored visits in the park - as presented also in their book *Matebilandia*. Alessandro Foschi demonstrated the use of modern technology in connection with tutored visits.



Lorenza Resta (left) and Stefano Alberghi (right) demonstrating a mathematical machine to Andreas Theve in on of the special Matebilandia tutoring areas in the park

Angelo Lisoni, from the Italian Kangaroo committee, suggested that final competitions could be run in amusement parks in international collaborations.

Andreas Theve and Johan Lotsander from Gröna Lund in Stockholm described the development of of their "Edutainment days", arranged in collaboration with the city of Stockholm, the House of Science in Stockholm and the Swedish National resource centre for physics education. During 2012, these days attract nearly 5000 students.

Chris Chedzey from Thorpe gave an abbreviated example of a class lesson, and gave glimpses into the classroom facilities at Thorpe park. He also demonstrated with the participants how the class could be involved in the demonstration and emphasized that our brains already know how to manage the math and physics required to catch a ball.



Part of the Katun roller coaster, with the high loop in the middle.. More information about the Katun can be found at <http://rcdb.com/764.htm>.

Alessandro Foschi discussed the role of technology in educational projects, and Giovanni Pezzi and Barbara Malano discussed the development of pedagogical projects in the amusement park, in a collaboration involving the park, schools and teacher educations.

Finally, we had the chance to ride two very impressive roller coasters: Katun and iSpeed. Katun is a period of 7200 days in the Maya calendar and is themed like a Mayan ruin. It includes a large cobra roll and an impressive loop, whose shape we contemplated. The iSpeed launch coaster offered a long smooth ride. The launch itself, using the LSM (Linear Synchronous Motor) technology, seemed to increase in intensity, unlike hydraulic launches where the force decreases as the pressure drops. At the end of the second day, we also got ourselves very wet during a beautiful sunset ride in the new flumeride-cum-roller coaster Divertical, with an unusual vertical lift hill.

We aim for a follow-up meeting next year in Gröna Lund, possibly in connection with the edutainment day in September. Contact one of us if you are interested in participation.

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