Remote Laboratory: Application and usability

A Strategy for E-learning at IFSC

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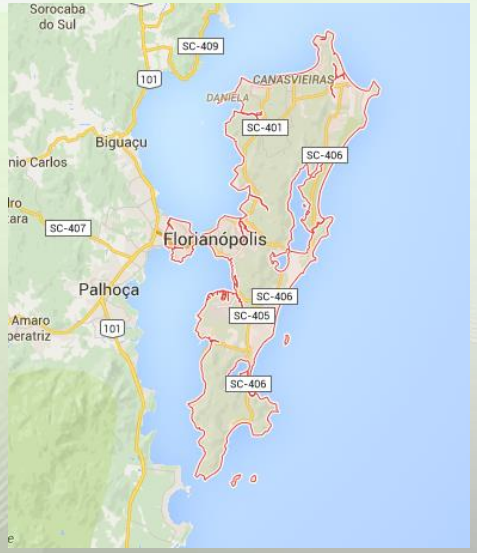

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Agenda

- Objective
- E-Learning in Brazil and obstacles at IFSC
- Remote Labs
- First Remote Lab usage with students at IFSC
- Next steps and an inquire for new subjects
- Conclusion

Objective

- Show the possibilities for the use of Remote Labs
- E-Learning as a strategy for improve the laboratories pratices
- Determine the usuability for Remote Labs at DAELN/IFSC

E-Learning in Brazil

- Law in 1995
- Allow 100% of the total curricula
- Ordinance in 2004 allowing up to 20% of the total curricula in E-learning to encourage the use of this methodology

Obstacles of E-Learning at IFSC

- Despite of the Law, still facing technical difficulties
  - Lack of investment
  - Personal barriers

- Some issues appears:
  - How to guarantee the same quality of learning as the classroom method?

Remote Labs

- Combine the advantage of simulation with the practical experiments
- Remote Labs are well developed all around the world
- Allow the use of laboratories 24/7 either for students and teachers
- Safe environment for real experiments
- Spread the real laboratories access

First Remote Lab usage with students at IFSC

- In 2014 and 2015
  - two experiments
  - a group of fifteen students from the subject “Operational Amplifiers”
- Students experienced:
  - Similarity of local labs
  - The method do not substitute the local hands-on

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Next steps and an inquire for new subjects

- It was applied a questionnaire with nine professors
- Those professors worked in 2014/2 and 2015/1 with different subjects from:
    - Electronic Technical Courses (secondary level)
    - Electronic Technological and Electronic Engineering Courses (undergraduate level)
    - Post Graduation

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Next steps and an inquire for new subjects

- How many experiments did you accomplished on the subject?

- From those accomplished, or further than that, how many experiments could be done with remote laboratories?

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Next steps and an inquire for new subjects

Areas of interesting:

- Circuits Analysis
- Analog Electronics
- Digital Electronics
- Electronic Processing of Energy

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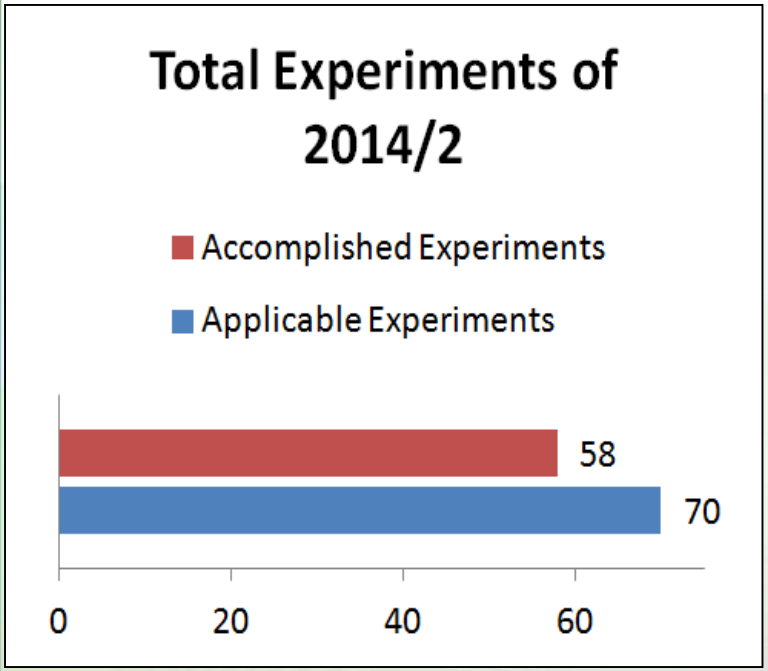
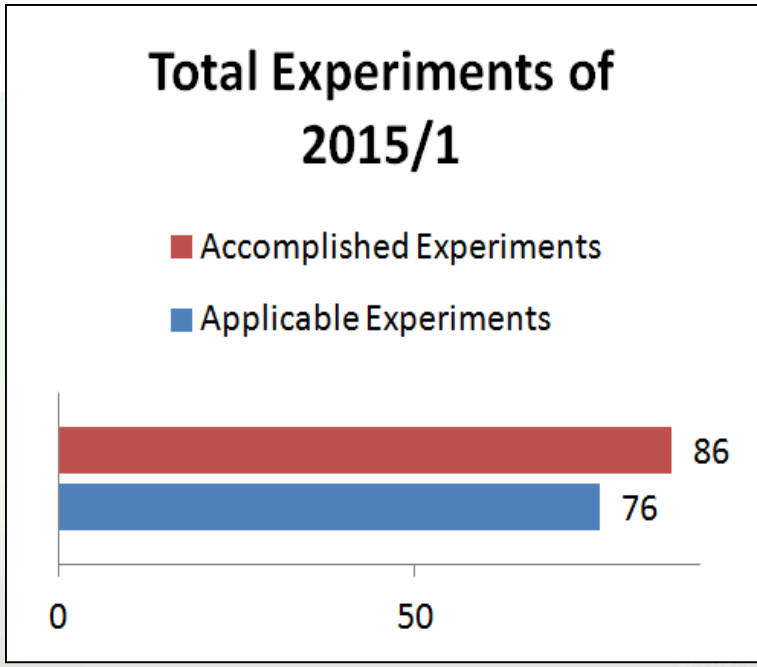
Next steps and an inquire for new subjects





Conclusions

- Remote lab cost x benefit
- time expend in preparation
- the use for many students as possible at the same time
- the increase of the offer (saturation of local labs)
- the professors from the survey are interested in the use of remote labs
- many of experiments can be done using remote labs
- due to all that, IFSC starts to participate as a partner in a ERASMUS+ Project called VISIR+

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