

# TekkiKids - A Learning Laboratory for Future Engineers

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# TekkiKids

## Extra-mural Technology club for kids aged 9-12

- Is a joint research project between Meraka Institute, Pretoria and University of Joensuu, Finland
- Funded by Department of Science and Technology and Finnish Embassy in South Africa



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# Objectives

- Provide young learners the opportunity engage with technology in a hands-on manner.
- Nurture an interest for science, engineering and technology
- Increase the number of children with ICT and technology exposure
- Work towards new innovations in collaboration with learners
- Expose learners to different technologies, environments and cultures
- Provide researchers with a living laboratory for conducting research in educational technology, pedagogy...
- Investigate the possibility of new technology "toys" that involve hands-on learning experiences
- Network with industries to source real problems for learners to solve
- Develop Kid's Club hubs within the country and outside the country for kids to work together and learn from each other



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# Research Questions

- What are the key elements that make a technology club successful in developing positive attitudes towards Science Engineering and Tecnology?
- What is needed to support massification of technology clubs among South African primary schools?



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# Practical arrangements - pilot study

- 5 primary schools (2 public, 3 private)
- 2 hours every second week
- Mixing well resourced schools with less resourced schools
- 3 groups of 12 kids, grade 5-7
- Kids working in pairs or groups of 4
- Long term commitment (18 months)



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# Facilitation methods

- Problem-based learning
- Self-directed learning
- Using hands-on technology
- Learning by doing
- Group work, collaborative learning
- Investigate-design-build-evaluate-communicate
- Exposure



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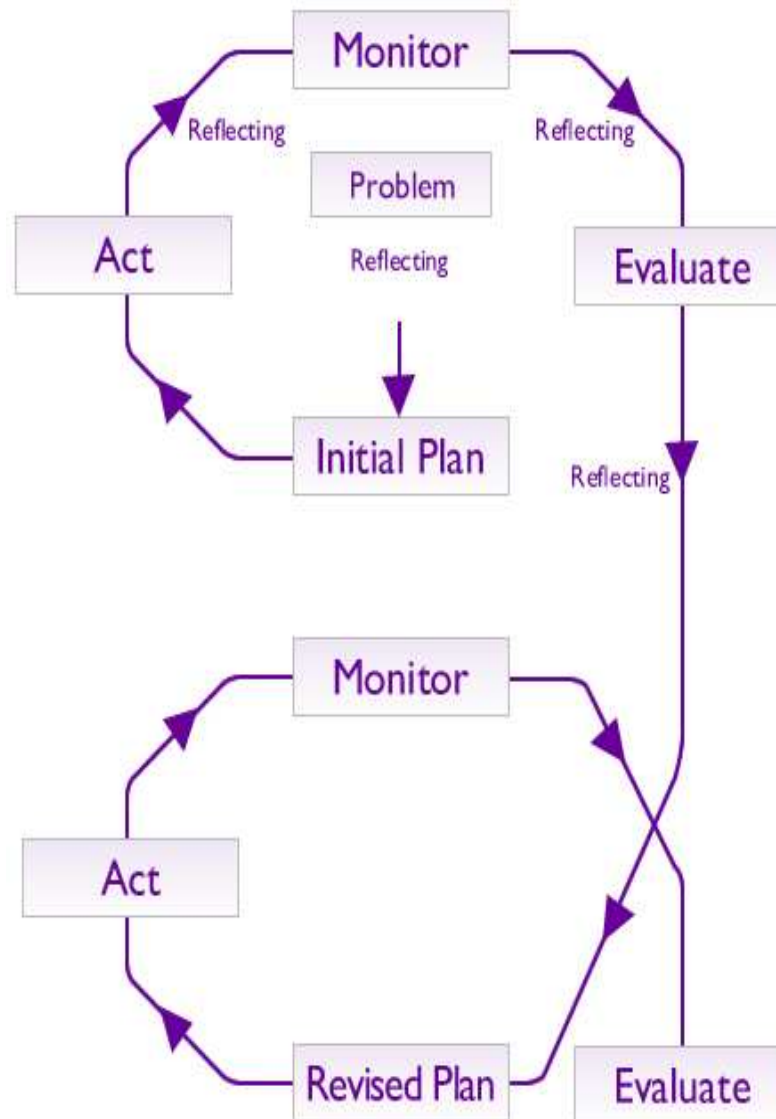
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# Research Method - Action Research

A spiral of cycles of planning, acting (implementing plans), observing (systematically), reflecting... and then re-planning, further implementation, observing and reacting



# Data capture

- Facilitators' diary
- Learning diary (multimedia specialist)
- Video
- questions/answers
- designs/programmes



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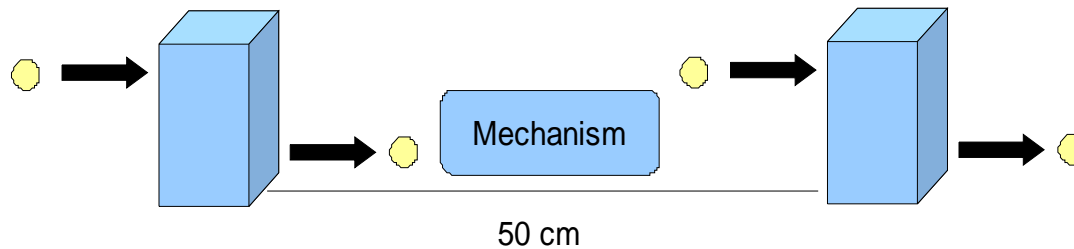
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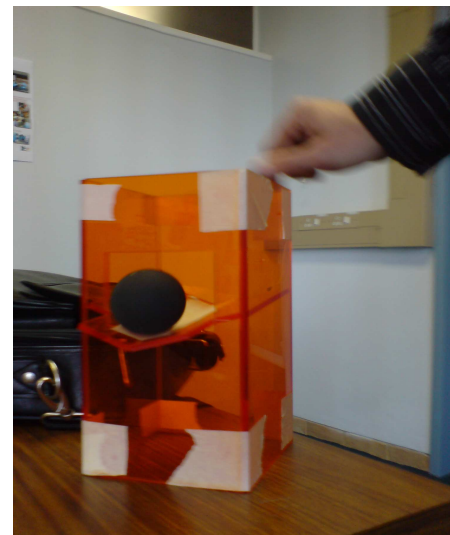
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# Current Challenge



- Build a programmable Lego robot that can detect – catch – transport – lift – drop a ball
- Link activity with Finnish Kids' Club



# Team effort

- ROLES
- Team manager and researcher
- Programmer
- Multimedia Specialist
- Design engineer



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# Observations

- Fun-factor is important
- Communication between schools very limited (language, culture)
- Competition engages (and creates losers)
- Resistance to share ideas
- Differences in interests
- Big difference in pre-knowledge, scaffolding
- Planning is hard, trial-and-error rules
- Some kids used to be spoon-fed



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# Evaluation difficulties

- Own facilitation
- Attitudes towards SET
- Answers of 9-12 year using second language
- Being objective
- Creating more questions than answers



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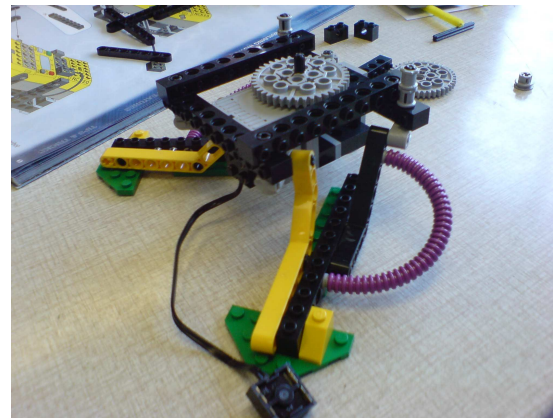
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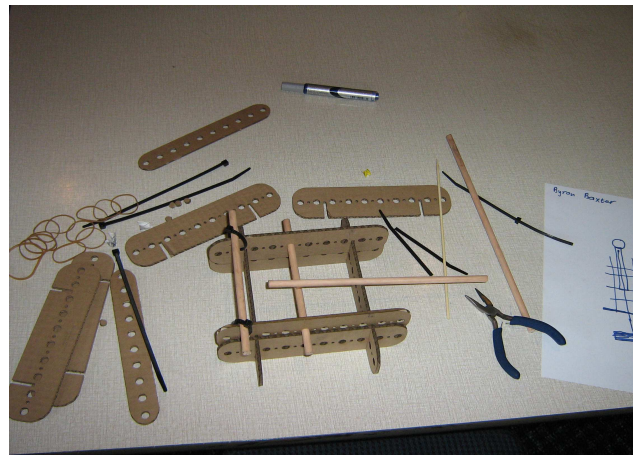
# Challenges

- Create an environment where SET is fun, stimulating, interesting, engaging, entertaining for the kids
- support massification of it among South African primary schools



# Massification

- Facilitation resources – resource database
- Affordable/Available technologies
- Creating Hub schools
- Training of facilitators
- For less-resourced as well as well-resourced



# Evaluation help needed :)

- How should we assess and evaluate the TekkiKids project?
- Recommendations welcome!

Thanks for listening!



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