

An Evaluation of the Queensland Solar Schools Initiative

Doctor of Education Research
conducted by
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Solar Powered House



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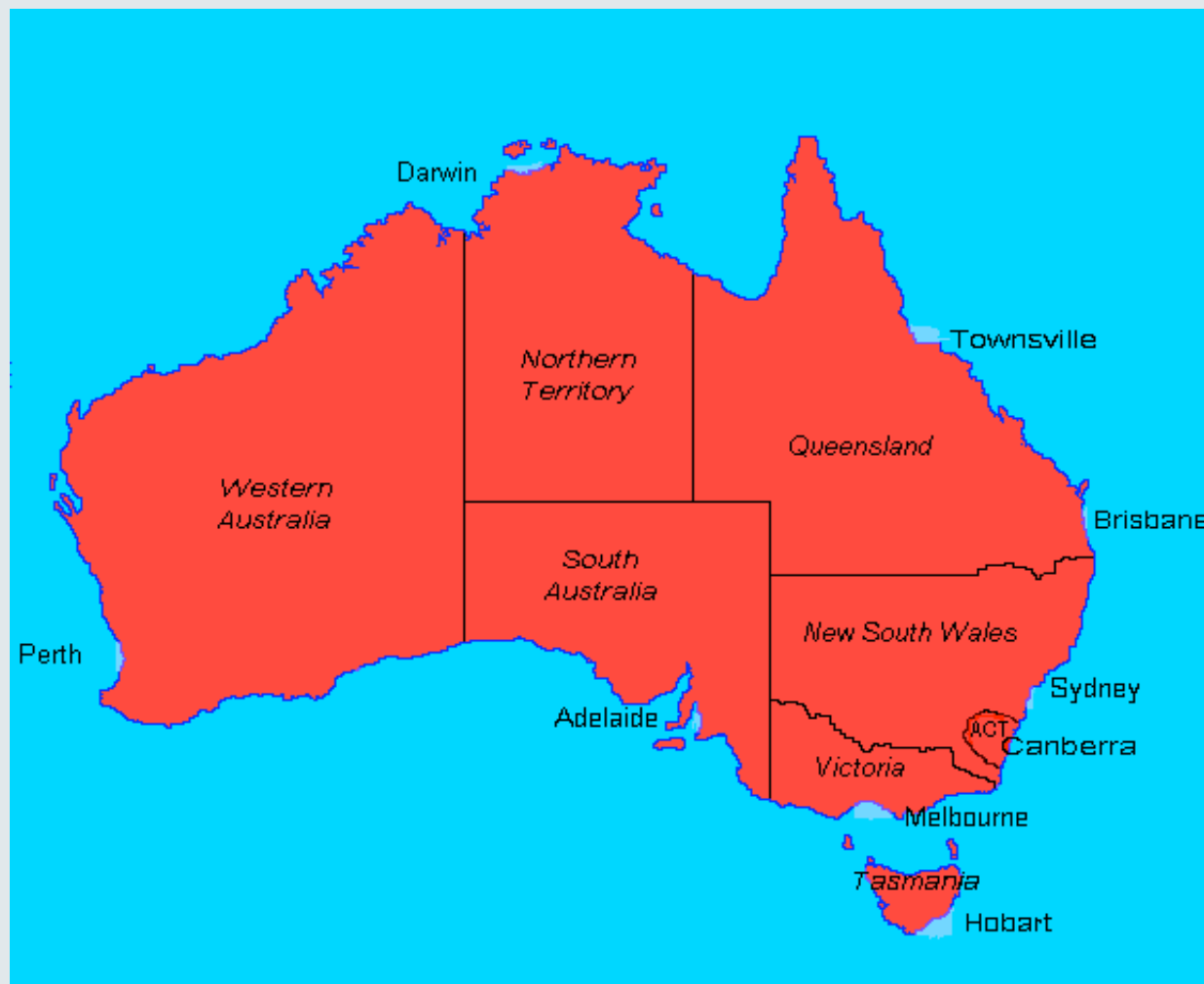
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Research Question

Does the promotion of photovoltaics (PV) in schools influence the uptake of energy efficiency measures and energy conservation behaviours?



The State of Queensland



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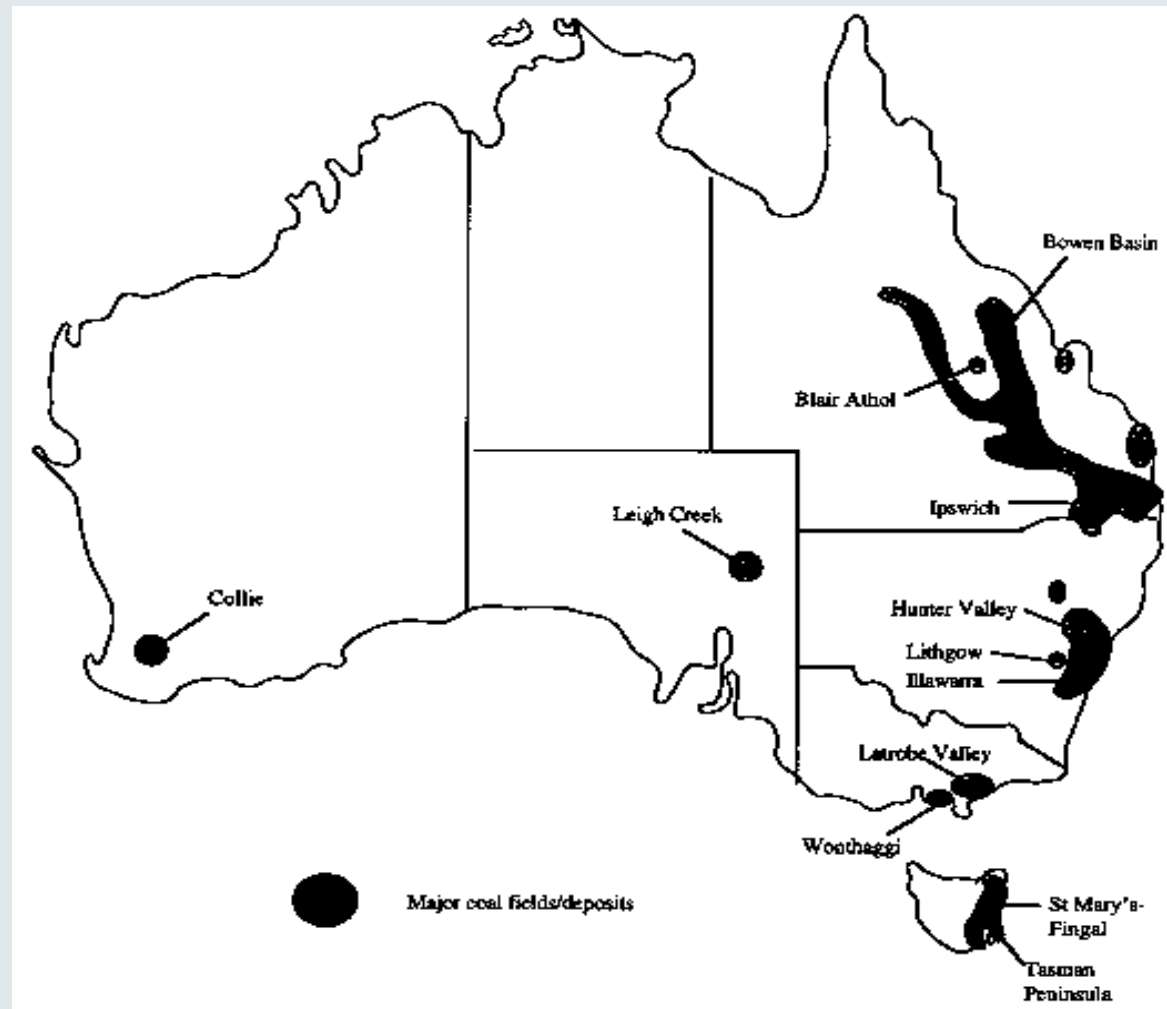
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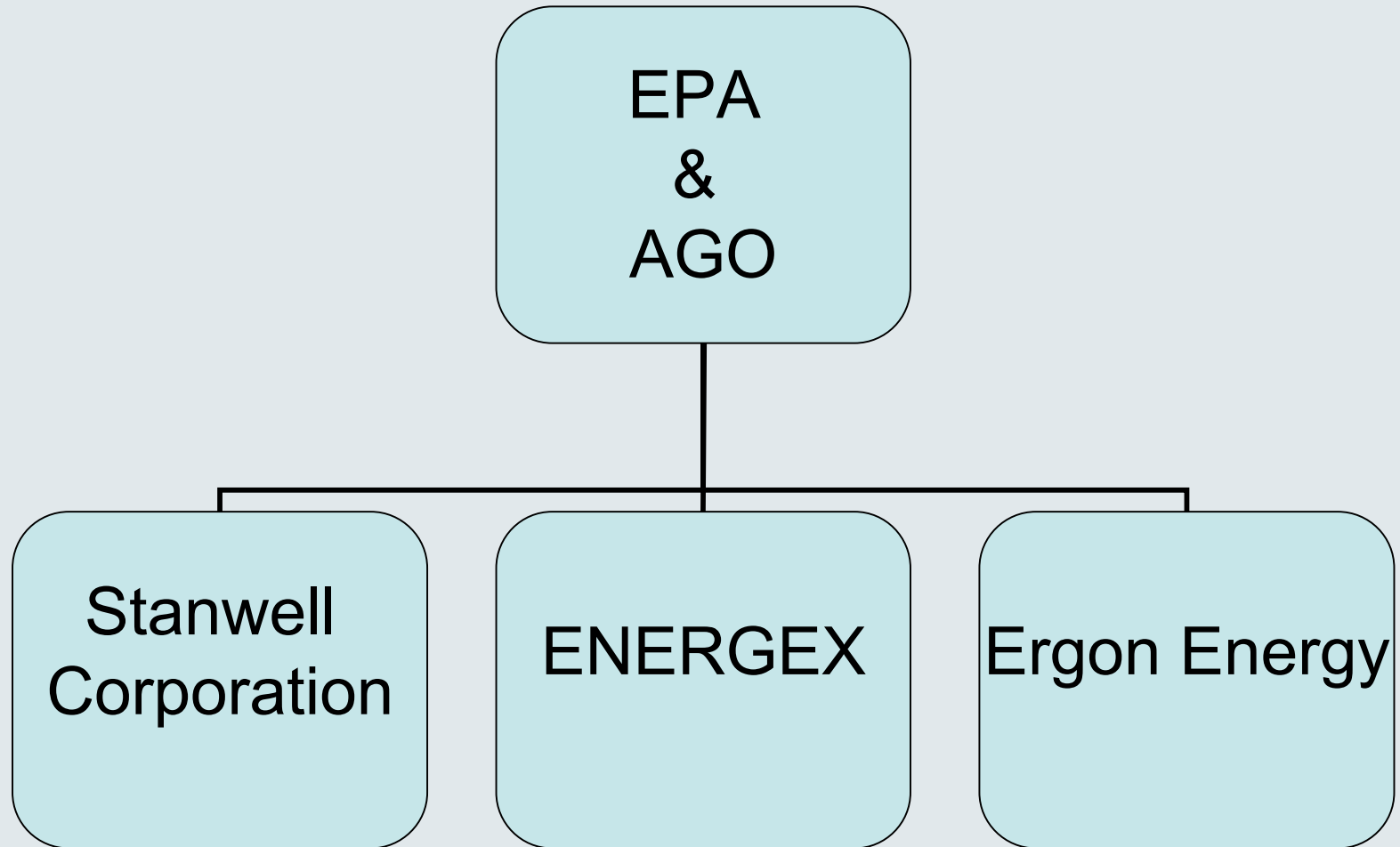
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Australian Coal Deposits



Solar Schools Stakeholders



Energy Industry Territories



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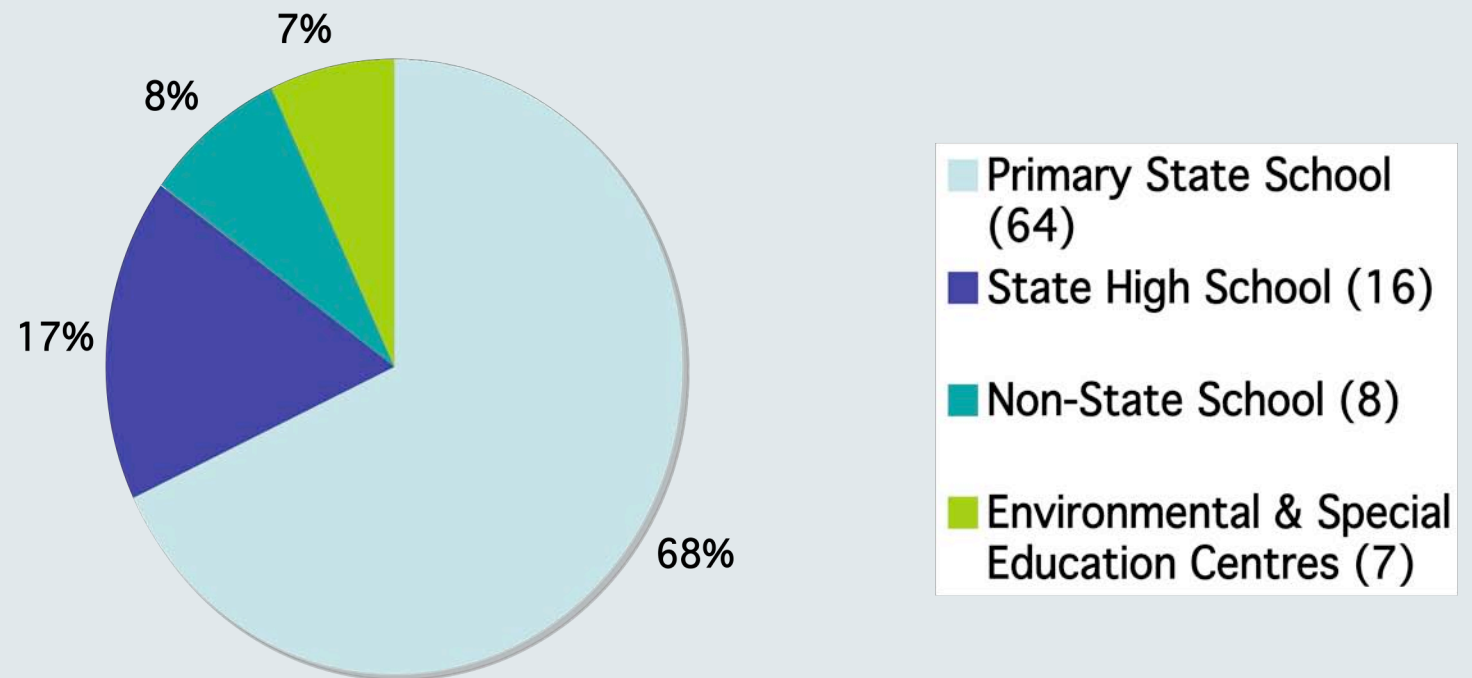
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Queensland Schools that received Solar PV Systems (2001-2006)



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Queensland *Solar Schools* Initiative Objectives

Educational

- ☀ Innovative, hands-on teaching tool

Environmental

- ☀ Decrease reliance on coal-fired power
- ☀ Reduce greenhouse gas emissions

Economical

- ☀ Reduce cost of school electricity bills

Social

- ☀ Raise community awareness of renewables
- ☀ Increase Green Power subscriptions

Purpose of this Study

To investigate the relationship between the installation of solar PV systems in schools and the uptake of energy efficiency measures and energy conservation behaviours.



Data Collection Procedures

- ☀ Energy Efficiency & Energy Conservation Survey
(110 in total)
- ☀ Attitudinal Survey
(100 in total)
- ☀ Follow-up emails & telephone conversations with
school principals and solar PV project leaders
- ☀ School visits
(2 solar schools)
- ☀ Student focus groups & teacher interviews

Survey of Energy Efficiency & Energy Conservation Behaviours

Part 1: Demographic Information

Part 2: Energy Costs

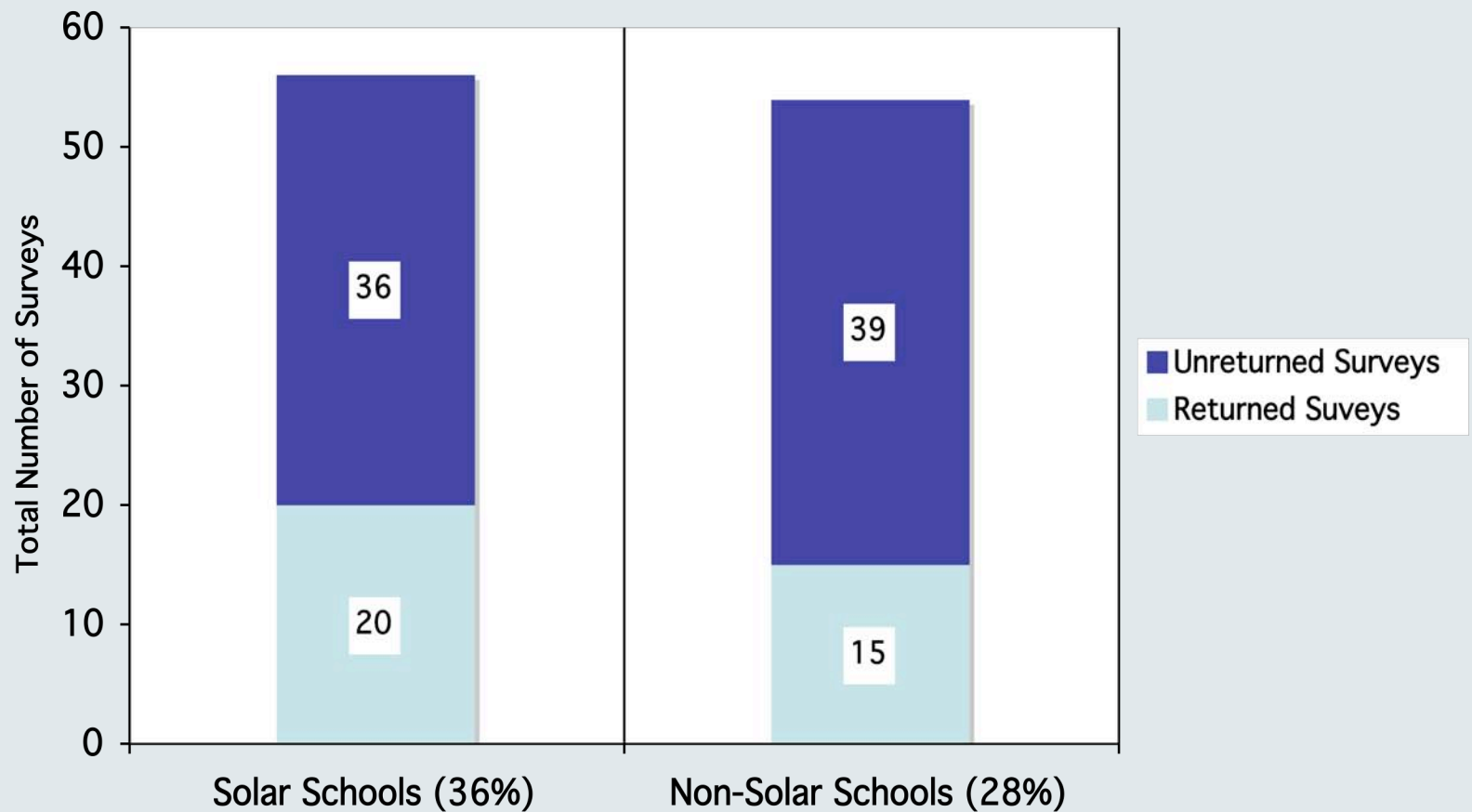
Part 3: Energy Efficiency Measures

Part 4: Energy Conservation Measures

Part 5: Solar Photovoltaic (PV) Installation



Number of Surveys Returned



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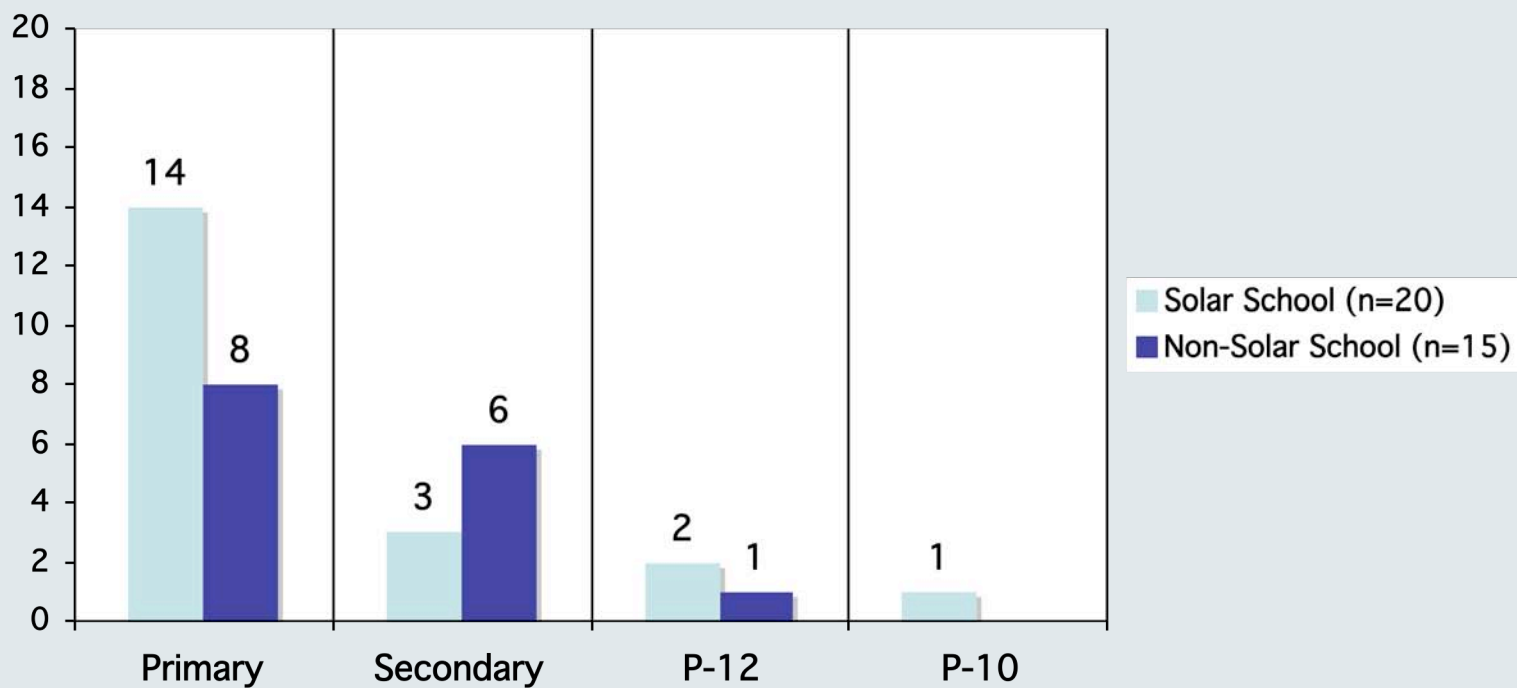


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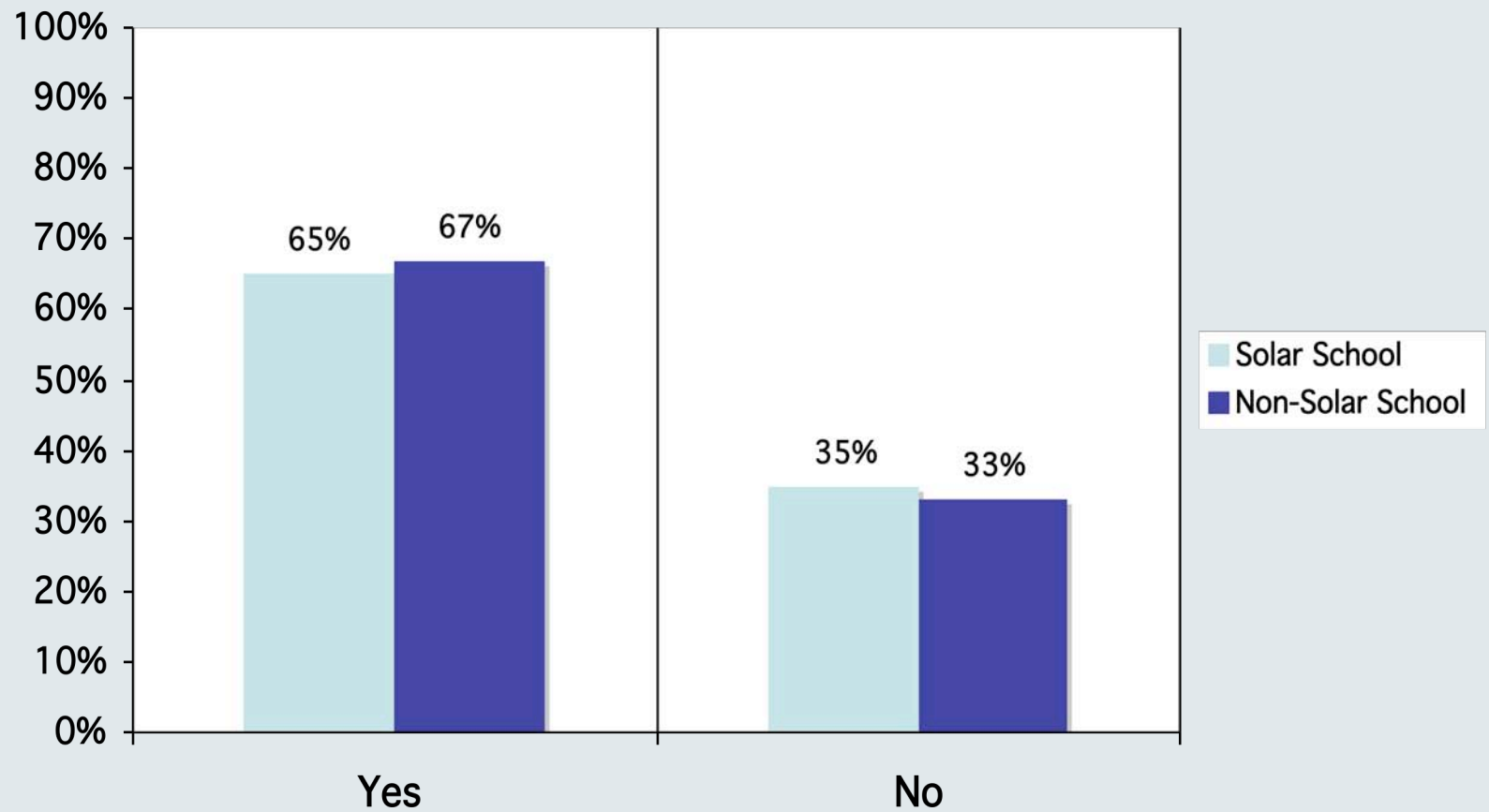
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Part 1: Demographic Information

School Levels



Billing Information



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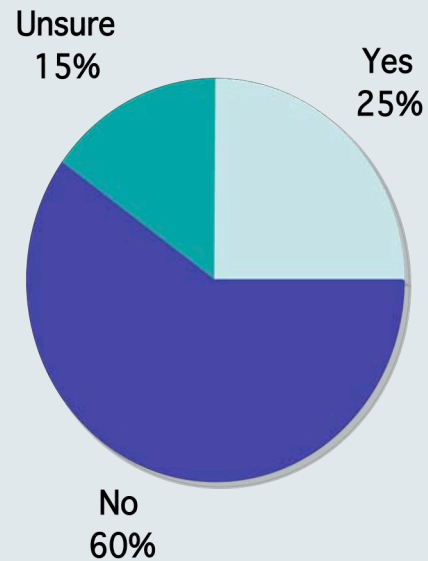


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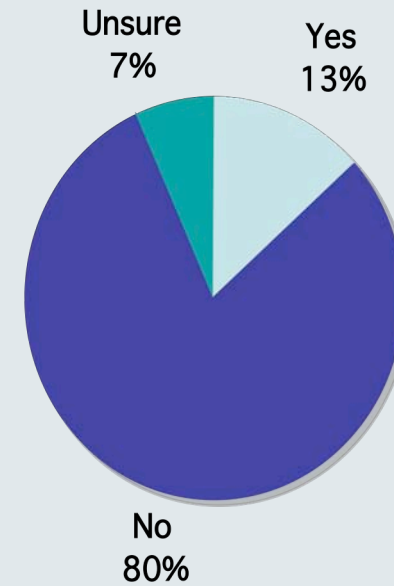
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Energy Policy

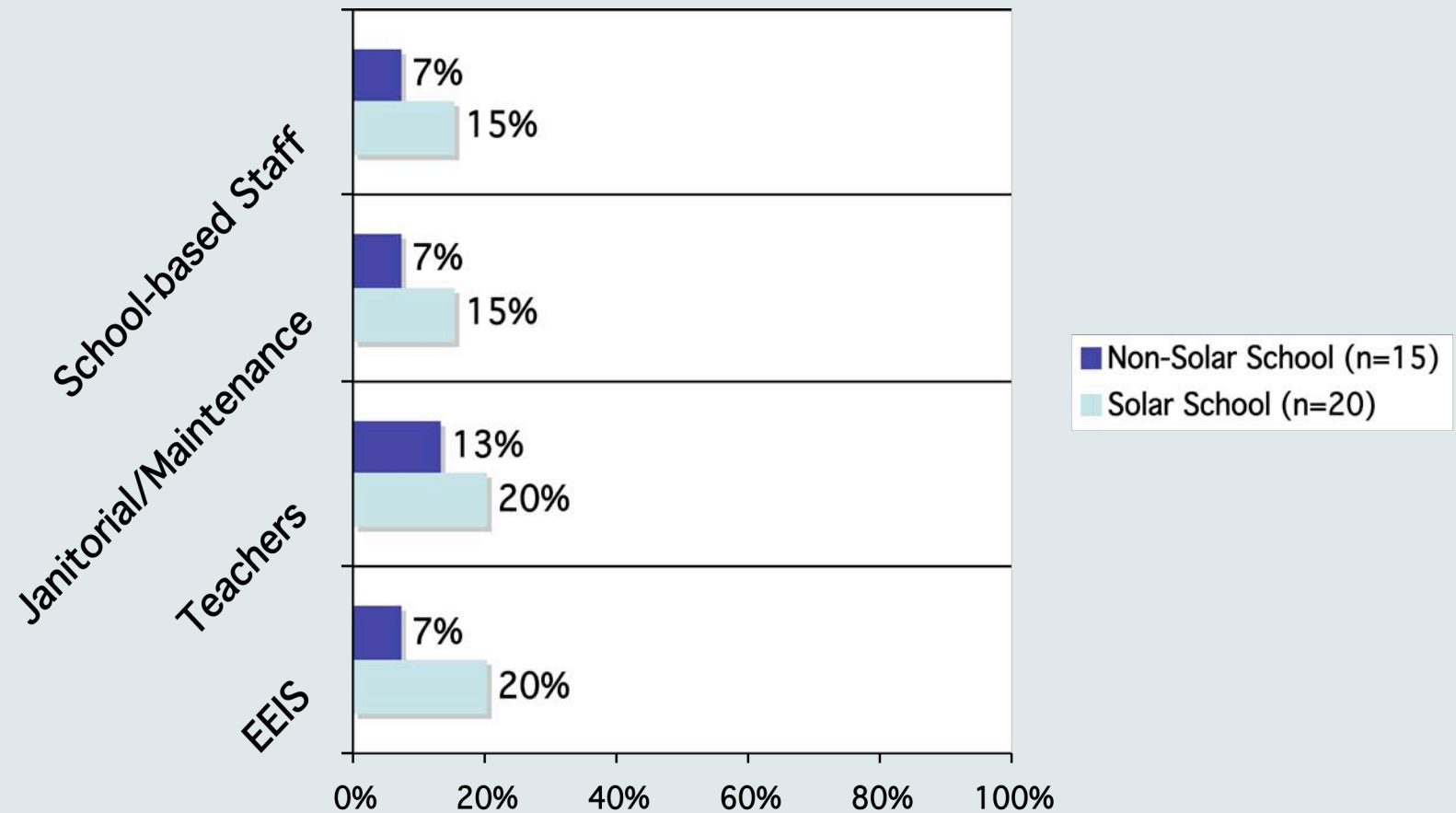
Solar Schools with
Energy Policy



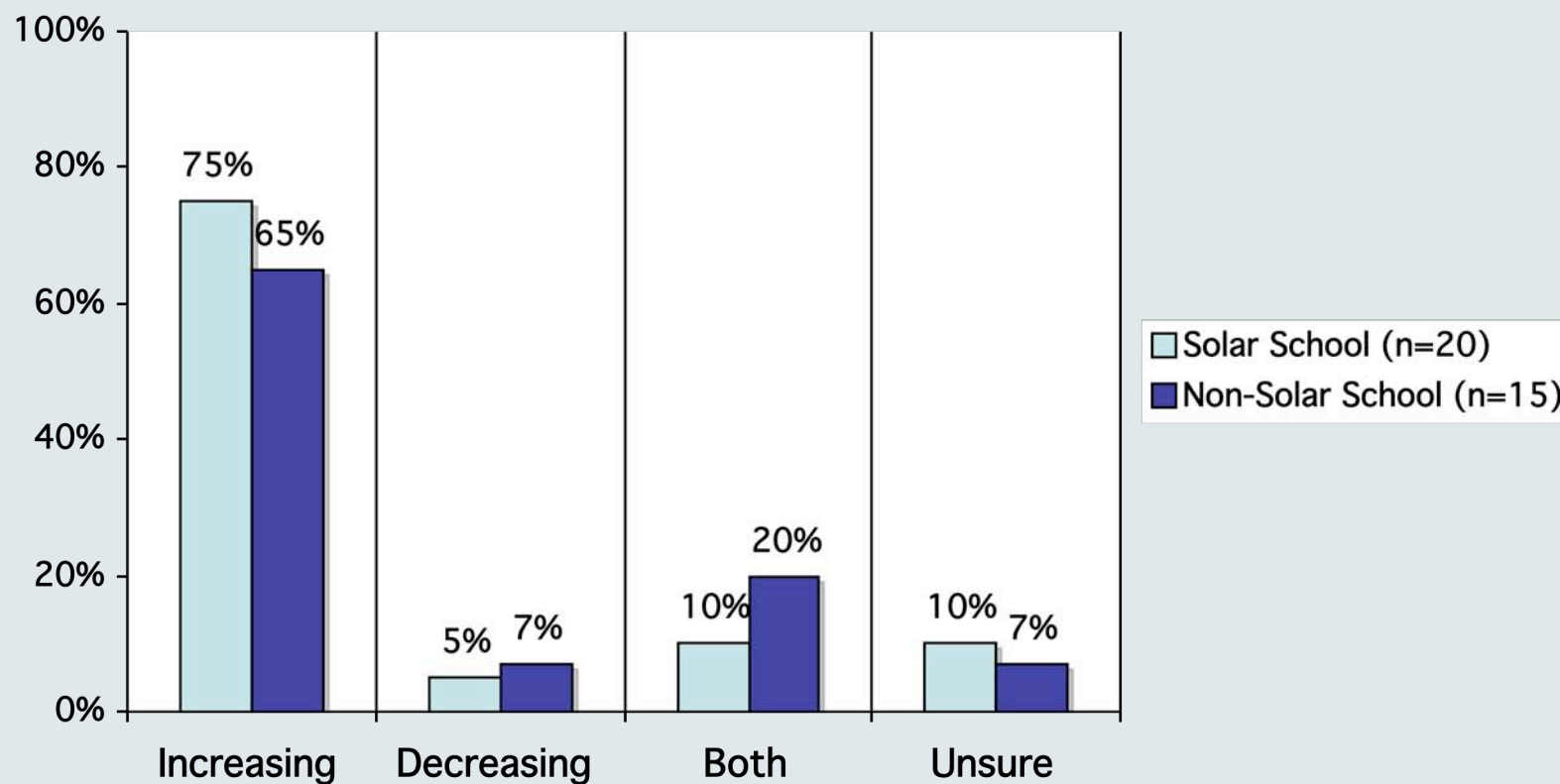
Non-Solar Schools with
Energy Policy



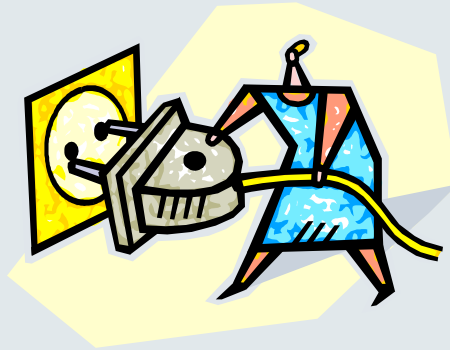
Participation in Energy Reduction Training Courses



Status of Energy Costs



Ways to Reduce Energy Costs



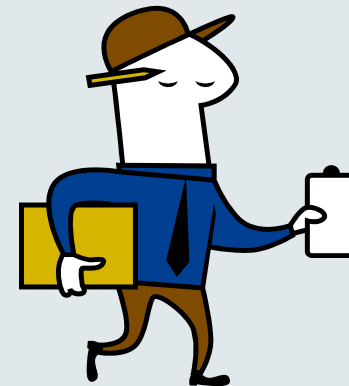
Behavioural

Educational



Technological

Official



Barriers to the Uptake of Energy Efficiency Measures

- ☀ Lack of information or knowledge
- ☀ Institutional constraints
- ☀ Financial costs
- ☀ Low energy pricing

Ways to Remove Energy Efficiency Barriers in Schools

Financial Costs & Institutional Constraints

- ☀ Implement official energy policy
- ☀ Retrofit and replace lighting & equipment

Lack of Information & Knowledge

- ☀ Conduct energy audits
- ☀ Provide energy education & training

Low Energy Pricing

- ☀ Subscribe to Green Power programs

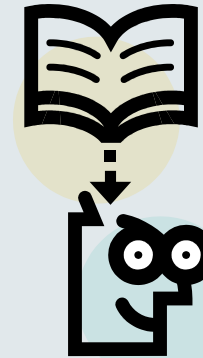
Fostering Energy Conservation

Changing wasteful energy consumption practices into energy conservation behaviours, “involves the unfreezing of existing behavioural patterns” (Jackson 2005, p.115).



Barriers to Energy Efficiency & Energy Conservation Behaviours

Education & Training



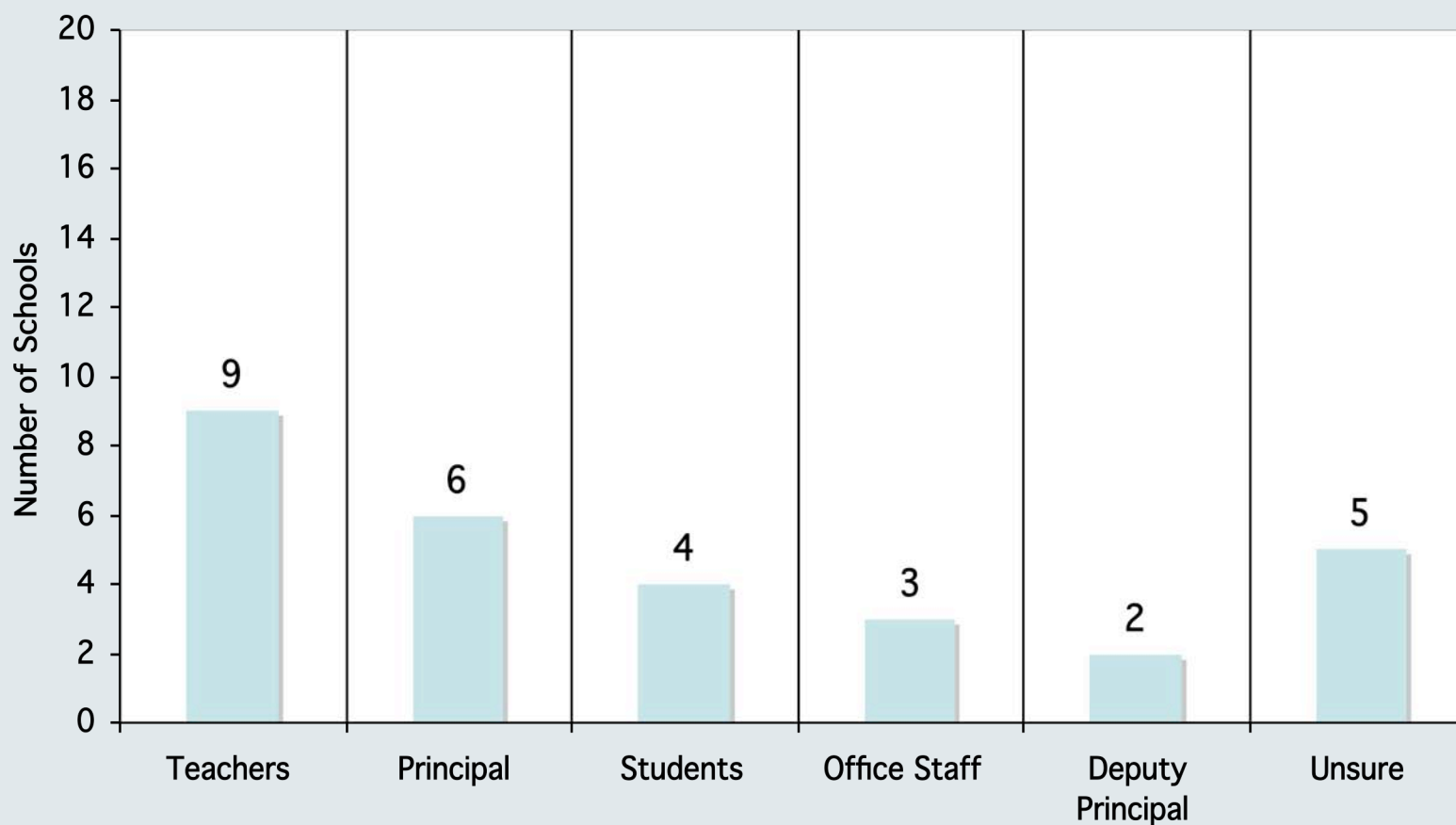
Hardware & Software



Buildings & Equipment



People Sponsors Trained



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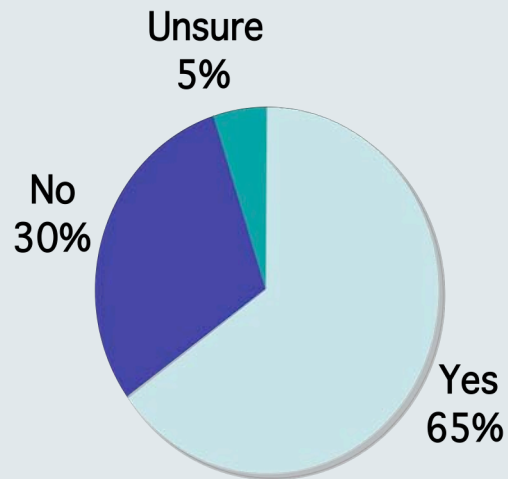


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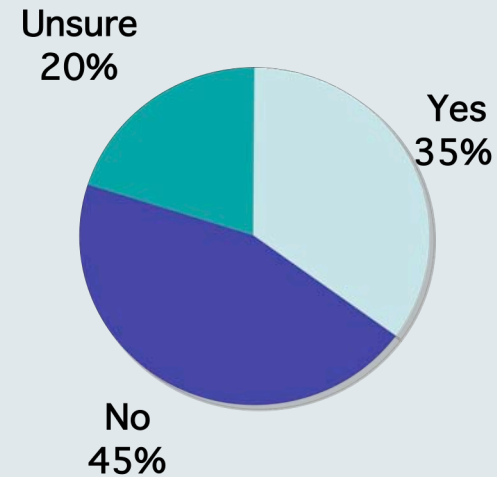
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Solar Energy in Curriculum

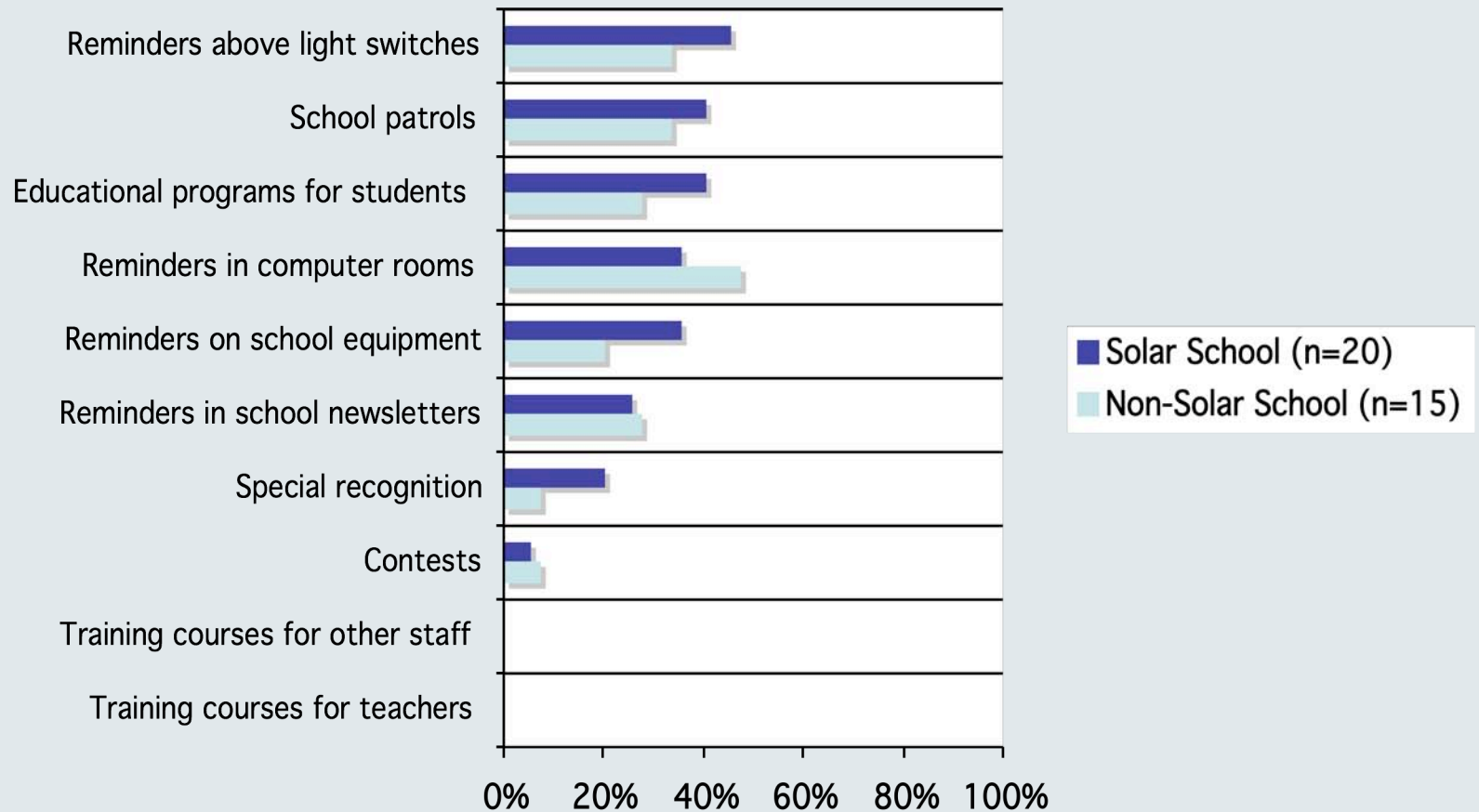
**Solar PV System
in Curriculum**



**Sponsor provided Teaching
Materials**



Reminders to Conserve Energy



Hardware & Software

The solar PV system cannot be used as an effective teaching tool because:

- ☀ Panels aren't visible
- ☀ No data-monitoring equipment
- ☀ Software isn't user friendly
- ☀ Hardware / Software isn't working

Position of Solar PV Panels & Meter



Buildings & Equipment



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Research Findings

Queensland *Solar Schools* Initiative has not had a significant influence on the uptake of energy efficiency and energy conservation behaviours in schools.



References



Jackson, T. (2005). *Motivating sustainable consumption: A review of evidence on consumer behaviour and behavioural change*. Report to the Sustainable Development Research Network, January 2005.