

The Contribution of 'Green' School Ground Design to Moderate Activity Levels



CUHI presentation
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STUDY PURPOSE

To identify, test and refine appropriate research methods for a Canada-wide study investigating the influence of school ground design on children's physical activity

WHY?

Because Canadian children spend on average
110 minutes/school day on the school ground

This equals about 25% of the school day

KEY CONCEPTS

PLAYABILITY

SCHOOL GROUND GREENING



METHODS

1. Macro-scan (SOPLAY and behaviour mapping)
2. Micro-observation
3. Mapping
4. Guided walks and photography
5. Interviews
6. Accelerometry

MACRO-SCANS

System for Observing Play and Leisure Activity
in Youth (SOPLAY) – Dr. Thomas McKenzie,
San Diego State University

Strengths: easy, quick, widely used, little
equipment

MACRO-SCANS

Behaviour mapping: Dr. Robin Moore and Dr. Nilda Cosco, North Carolina State University

Strengths: can consider finer design implications; allows for comparison across school grounds

MACRO-SCANS

interesting findings

1. Girls engaged in significantly more sedentary, less moderate and less vigorous activity than boys.
2. The 3 target areas with natural ground cover promoted similar levels of physical activity for boys and girls.
3. Fixed play equipment: highest percentage of vigorous activity and lowest percentage of moderate activity for boys and girls.

MACRO-SCANS

interesting findings

4. Greened area: highest percentage of moderate activity for boys and girls.
5. Open playing field: 44% of girls sedentary (27% of boys sedentary)
6. Open asphalt: 42% of girls sedentary (29% of boys sedentary)

KEY POINTS

- a. Gender strongly correlated with the intensity of children's physical activity on school grounds
- b. Conventional design features of school grounds not serving girls well
- c. Greened area important for moderate activity

MICRO-OBSERVATIONS

5 girls and 5 boys, grade four

5 ten-minute observations

Strengths: can take into account variables such as age, ethnicity; can corroborate qualitative data

MICRO-OBSERVATIONS

interesting findings (caveat: small sample size)

1. Boys spent more time engaged in moderate and vigorous activity and less time in sedentary activity than girls.
2. On greened area: girls spent most of their time in moderate activity (79%); boys divided time equally among sedentary, moderate and vigorous
3. On the open playing field and open asphalt, girls spent most of their time (50% / 68%) in sedentary activity (not boys – mostly moderate)

KEY POINTS

micro-observations (=macro-scans)

- a. Gender strongly correlated with the intensity of children's physical activity on school grounds
- b. Conventional design features of school grounds not serving girls well
- c. Greened area important for moderate activity

MAPPING

Class of grade four students (only 15 with consent forms)

Strengths: students enjoy; visual representation; visual cue for interviews; can investigate play across seasons

MAPPING

interesting findings

1. **Gender:** girls show stronger preference for all areas with natural elements; boys show stronger preference for open asphalt and tennis courts than girls
2. **Greened area:** mentioned by the highest number of students – and mentioned by all the girls
3. **Greened area:** supports second highest number of different activities (after open asphalt)

GUIDED WALKS AND PHOTOGRAPHS

15 students, some singly, some in small groups

Strengths: walks provide visual prompt; can investigate play across seasons; would work for students of all ages; photos provide visual cue for interviews

GUIDED WALKS

interesting findings

1. Greened area: the only area discussed by all groups
2. Greened area: mentioned more than 2 times as often as any other area
3. Greened area: 4 times as many mentions of moderate activities than in any other area
4. Moderate activity: predominantly open-ended play (i.e., exploratory, pretend, creative)
5. Greened area: mentioned more than 2 times as often as any other area

INTERVIEWS

15 students, same groupings as guided walks

Strengths: can explore motivation, enhance interpretation, probe data from other methods; transcripts can represent student voices

INTERVIEWS

interesting findings related to “playability”

What are students looking for?

I. Places they can call their own (‘territoriality’)

“I like to play on the tennis courts because I like to play soccer and it’s good because it’s nice and flat and the nets they split half the court, usually the grades fives and sixes play over here and we play in the back.”

playability...

2. Well-defined places (trees, rocks, walls, nets ...)

3. Natural elements

“The rocks are shaped like a big couch and we pretend that we are cavemen people and the rock in the middle was where the fireplace would be, and there were separate beds far away from each other, and it was like a tent in my head, but other people, I don't know what they thought, ...

playability...

4. Places to hide, slide, climb, jump

“This circle of rocks, and this tree, it’s not a big one, they’re little, but people jump on them and Julie plays lava or something on them, and a person swings around on one arm trying to catch you while you’re jumping on their arm, and if you fall off too many times you’re the next person.”

playability...

5. Challenge

6. Places to socialize

7. Places that can be shaped (by body and mind)

“There’s this bush that’s all broken, it’s the queen’s chair, and next to it is this rock that is shaped like a bowl, people put grass and dirt and water and they put it in the cauldron bowl rock thing, and right by that is the beds where the queen’s daughter goes, and then on the other side is the table, and sometimes you eat the potions, ...”

ACCELEROMETERS

5 girls and 5 boys, grade four

Problems: cost (\$US 65 per unit rental); could only use small portion of data; our mean intensity counts for each level (moderate and vigorous), using the accelerometer data, didn't match what was suggested in the literature

SUMMARY OF FINDINGS RELATED TO GREEN DESIGN

1. **Macroscans:** highest percentage of moderate activity for boys and girls in greened area.
2. **Micro-observations:** in the greened area, girls spent most of their time engaged in moderate activity
3. **Mapping:** greened area mentioned by the highest number of students

SUMMARY

- 4. Guided walks:** greened area was the only area discussed by all groups; it was mentioned more than 2 times as often as any other area; and there were 4 times more mentions of moderate activities in the greened area than in any other area
- 5. Interviews:** students like ‘natural’ elements, suggesting that green design makes school grounds more ‘playable’

COMPARISON WITH TWIN PILOT IN AUSTRALIA

1. **Macroscans:** Green areas encourage the most moderate activity in both studies. (N.B. Fixed play equipment encourages the most vigorous activity; the open playing fields and asphalt encourage the most sedentary activity for both boys and girls in Australia, and for girls in Toronto)
2. **Mapping:** Green area mentioned second most often in Australia and most often in Toronto.

COMPARISON WITH TWIN PILOT IN AUSTRALIA

- 3. Mapping:** Green area associated with the highest number of activities in Australia, and the second highest number in Toronto.
- 4. Guided walks:** Green area discussed and photographed most often in both studies.

CONCLUSION

Methods: for future research, need macro-scans, micro-observations, guided walks and interviews

Hypothesis that needs corroboration: green design could make an important contribution to children's physical activity by appealing to children often relegated to the sidelines (especially girls) and by encouraging moderate levels of physical activity



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