Measuring Environmental Performance of Primary and Secondary Schools. The Case Studies from Cyprus.

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Introduction

- Waste volume increase,
- accumulation of waste, and
- non-rational waste management.

- Environmental, and
- socio-economic issue.

- Consequences:
  - Global environment, and
  - human survival.
Aim and Goals of Research

- **Main aim:**
  - kind of waste produced,
  - how waste are treated.

- **Goals:**
  - waste minimization, and
  - prevention activities.
Problem Recording

- Huge volumes of waste,
- lack of environmental policy, and
- lack of environmental awareness.
Study Area–Schools of Primary and Secondary Education

Primary School

Secondary School
Motivation for Subject Selection

- Waste management,
- accelerated production and accumulation of waste,
- impact on environment and health,
- education – field of research and study,
- student community – important dimension to development of strategies.
Research Questions

- Environmental schools’ policy,
- waste management,
- attitude to EU policies, and
- zero waste production.
Methodological Approach

- Primary research:
  - on-site collection of primary data,
  - questionnaire, and
  - target group (cultivation of environmental awareness during Modern Greek lessons).
Waste Stream
Research Difficulties and Limitations

- Difficulties:
  - sorting of waste stream,
  - separation and precise measurement,
  - analyzing and obtaining results.
## Analysis of Waste Stream

<table>
<thead>
<tr>
<th>School</th>
<th>Food waste</th>
<th>Avoidable food waste</th>
<th>Plastics</th>
<th>PMD</th>
<th>Paper</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>2,015.00</td>
<td>480.62</td>
<td>234.76</td>
<td>926.20</td>
<td>299.40</td>
<td>4,046.00</td>
</tr>
<tr>
<td>Secondary</td>
<td>6,578.38</td>
<td>2,274.48</td>
<td>1,667.86</td>
<td>4,839.10</td>
<td>1,740.10</td>
<td>17,099.90</td>
</tr>
</tbody>
</table>

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<tr>
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<th>Paper</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Recycling</td>
<td>649.95</td>
<td>243.71</td>
<td>61.95</td>
<td>498.33</td>
<td>305.67</td>
<td>1,759.62</td>
</tr>
</tbody>
</table>
Quantity (g) – Average Percentage per School

Quantity (g) – Average Percentage (Recycling)
<table>
<thead>
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<th>PMD</th>
<th>Paper</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>16.19</td>
<td>3.70</td>
<td>1.81</td>
<td>7.12</td>
<td>2.30</td>
<td>31.12</td>
</tr>
<tr>
<td>Secondary</td>
<td>15.66</td>
<td>5.42</td>
<td>3.97</td>
<td>11.52</td>
<td>4.14</td>
<td>40.71</td>
</tr>
</tbody>
</table>
Quantity (g) – Average Percentage per Student
## Public Schools in Cyprus

<table>
<thead>
<tr>
<th>Number of Schools</th>
<th>Number of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Education</td>
<td>332</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>119</td>
</tr>
</tbody>
</table>
## Average Waste Production of Students of Public Primary and Secondary Schools in Cyprus Per Day

<table>
<thead>
<tr>
<th></th>
<th>Food waste (kg/day)</th>
<th>Avoidable food (kg/day)</th>
<th>Plastics (kg/day)</th>
<th>PMD (kg/day)</th>
<th>Paper (kg/day)</th>
<th>Total (kg/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>827.02</td>
<td>189.00</td>
<td>92.46</td>
<td>363.70</td>
<td>117.49</td>
<td>1,589.67</td>
</tr>
<tr>
<td>Secondary</td>
<td>842.77</td>
<td>291.69</td>
<td>213.65</td>
<td>619.97</td>
<td>222.80</td>
<td>2,190.89</td>
</tr>
<tr>
<td>Total</td>
<td>1,669.79</td>
<td>480.69</td>
<td>306.11</td>
<td>983.67</td>
<td>340.29</td>
<td>3,780.56</td>
</tr>
</tbody>
</table>
## Average Waste Production of Students of Public Primary and Secondary Schools in Cyprus Per Year

<table>
<thead>
<tr>
<th></th>
<th>Food waste (tn/year)</th>
<th>Avoidable food (tn/year)</th>
<th>Plastics (tn/year)</th>
<th>PMD (tn/year)</th>
<th>Paper (tn/year)</th>
<th>Total (tn/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td>148.86</td>
<td>34.02</td>
<td>16.64</td>
<td>65.47</td>
<td>21.15</td>
<td>286.14</td>
</tr>
<tr>
<td>Secondary</td>
<td>151.70</td>
<td>52.50</td>
<td>38.46</td>
<td>111.60</td>
<td>40.10</td>
<td>394.36</td>
</tr>
<tr>
<td>Total</td>
<td>300.56</td>
<td>86.52</td>
<td>55.10</td>
<td>177.07</td>
<td>61.25</td>
<td>680.5</td>
</tr>
</tbody>
</table>
Results of Questionnaire

- Sample: 202 students

- Primary School: 5th and 6th Grade

- Secondary School: 1st Grade (target group)
  2nd and 3rd Grade
Indicative Questions:

Plastic bottles:

✓ School bin: 22% (primary) & 30% (secondary)
✓ Refill & reuse: 62% (primary) & 73% (secondary)
✓ Home bin: 0% (primary) & 16% (secondary)
- State knowledge regarding recycling: 87% (primary) & 85.5% (secondary)

- Ignorance regarding recycling materials: 68.5% (primary) & 53.5% (secondary)

- PMD: 100% ignorance
Conclusions

- Waste production rate varies between 2.87kg and 4.71kg (primary) and 13.05kg and 20.07kg (secondary) with an average of 31.12g and 40.71g per student, respectively.

- High percentage of students refill and reuse plastic bottles.

- Large growth potential remains untapped.

- Schools unit waste – recycling, use as an energy resource.

- Vulnerable groups of population.
- recycling at Secondary School (paper, plastics, PMD) – unsuccessful

- contradiction between students’ statements in questionnaires and in reality regarding knowledge of:
  - recycling, recycling materials, and
  - environmental subjects taught

- benefits which can rise from the continuous cultivation of environmental awareness
- absence of motivation to implement environmental policy

- non-existing policy for fines

- future research on waste production per student (community or national level)
- common environmental guide to all schools
- compulsory participation of all schools in environmental programs
- recruiting teachers with a minimum qualification degree in environmental studies
- transition to green economy.
We can't blame children for occupying themselves with Facebook rather than playing in the mud. Our society doesn't put a priority on connecting with nature. In fact, too often we tell them it's dirty and dangerous.

David Suzuki

Thank you for your attention!