



CELE Exchange, Centre for Effective Learning Environments  
2011/10

## Well-Being at School: Does Infrastructure Matter?

**Katrien Cuyvers,  
Gio De Weerd,  
Sanne Dupont,  
Sophie Mols,  
Chantal Nuytten**

<https://dx.doi.org/10.1787/5kg0lkzc81vc-en>

# Well-being at school: does infrastructure matter?

By Katrien Cuyvers, Gio De Weerd, Sanne Dupont, Sophie Mols and Chantal Nuytten, Institute for Educational and Information Sciences, Instructional and Educational Science, University of Antwerp.

*What is the impact of school infrastructure on the well-being of students in Flemish secondary schools? A study, commissioned by AGIO (the Flemish agency that subsidises school buildings), investigated the impact of educational spaces on their users and set out to identify empirical evidence supporting the importance of school infrastructure on the well-being of students in secondary schools.*

Research in the field of well-being among Flemish students in secondary schools has shown that age is an important predictor of well-being (Engels *et al.*, 2004a). The feeling of well-being decreases during secondary education and the lowest scores occur in the 9th and 10th grade, *i.e.* students aged 14 and 15, which is why our research team chose to study this age group. We were motivated by the thought that if our findings support the hypothesis that school infrastructure matters, small adjustments could lead to important advantages for the well-being of these vulnerable students.



A pre-fabricated building,  
used as a classroom

Rights reserved; © University of Antwerp

This led us to ask the following fundamental questions:

1. Can differences in students' well-being be attributed to the quality of their school's infrastructure?
2. Are there differences in well-being between students who study in good vs. poor quality school infrastructure, regardless of gender, grade and type of education?<sup>1</sup>
3. If point (2) applies, do these differences in well-being exist regardless of the type of urban area where the school is located and the school's educational network?<sup>2</sup>
4. Does school infrastructure have the same impact on all students? Are certain student groups more sensitive to infrastructure than others?

1. Flemish schools dispense four types of education. More information can be found at: [www.ond.vlaanderen.be/publicaties/eDocs/pdf/120.pdf](http://www.ond.vlaanderen.be/publicaties/eDocs/pdf/120.pdf).

2. According to [www.ond.vlaanderen.be/publicaties/eDocs/pdf/120.pdf](http://www.ond.vlaanderen.be/publicaties/eDocs/pdf/120.pdf), an educational network is "a representative association of governing bodies and often takes over some of the responsibilities of governing bodies". Flanders has three educational networks.

## METHODOLOGY

To constitute the sample group we used data collected by AGION's monitoring system (Leemans, 2008) which consisted of 48 quality indicators. They all relate to different aspects of well-being so it would have been impossible to use all of them. We therefore reviewed the international literature on aspects of school infrastructure which can influence non-cognitive outcomes (well-being, behaviour, etc.). After careful consideration, we chose the following quality indicators:

- the school building has a clear spatial structure where it is easy to find one's way around,
- as far as possible, the classrooms open onto a (green) outside area,
- the school building provides well-integrated ICT and easy access to various sources for research,
- all indicators which relate to safety (e.g. the school building is well protected against break-ins),
- criteria on the condition of school buildings,
- criteria on the amenity and physical comfort of school buildings (temperature, acoustics, lighting and ventilation).

We ignored the other quality indicators, for which we found no possible relationship to non-cognitive outcomes.

Our total sample consisted of 2 032 students aged 14 and 15 from 14 Flemish secondary schools, seven of which had good quality infrastructure and seven had poor infrastructure.

**Table 1** Distribution of sampling by gender, grade and education

	GENDER		GRADE		EDUCATION			
	Male	Female	9th	10th	Art	General	Vocational	Technical
1E	136	177	169	144	0	190	37	85
1G	74	117	96	95	0	90	0	101
2E	28	50	47	31	0	78	0	0
2G	48	59	72	36	0	108	0	0
3E	1	42	16	27	0	0	43	0
3G	100	136	113	123	119	0	117	0
4E	45	56	56	44	1	0	66	33
4G	28	56	34	50	0	3	0	81
5E	278	66	170	175	0	1	188	156
5G	49	131	95	85	0	11	33	135
6E	34	137	88	83	1	1	93	77
6G	22	43	31	34	0	0	65	0
7E	59	25	48	36	0	2	35	47
7G	31	0	29	2	0	0	11	20
n	933	1095	1064	965	121	484	688	735
	46%	54%	52.4%	47.6%	6%	23.9%	33.9%	36.2%

E: good quality infrastructure; G: poor quality infrastructure

Students were asked to complete a questionnaire on well-being (*WelbevindenInventaris voor Secundair Onderwijs* – Well-being Inventory for Secondary Education) (Engels *et al.*, 2004b). This questionnaire had already been validated (Engels *et al.*, 2004a), signifying that it was reliable and the different aspects of well-being it proposed could be measured. The questionnaire assessed seven dimensions relating to well-being: well-being in the classroom; well-being at school; parental involvement; contacts with

friends; study pressure; curriculum; and behaviour and general well-being. Scales consisted of different questions and these were grouped according to type (Engels *et al.*, 2004a).

1. Questions relating to feelings: students were asked to assess a specific context and then give it a score in function of how they felt about it, varying from “very bad” to “very good”. Example: Do teachers treat you with respect? How do you feel about this?
2. Questions relating to satisfaction: students were asked to answer questions relating to their satisfaction with certain topics. Again, answers varied on a five-point scale from “not at all” to “entirely”. Example: Do you think the school building is attractive?
3. Questions relating to behaviour: students assessed their own behaviour and how often they have behaved in a certain way at school, varying from “never” to “always”. Example: Do you participate in class?
4. General questions which give insight in the well-being of students: responses could vary from “I do not agree” to “I agree entirely”. Example: In general, I feel happy at school.

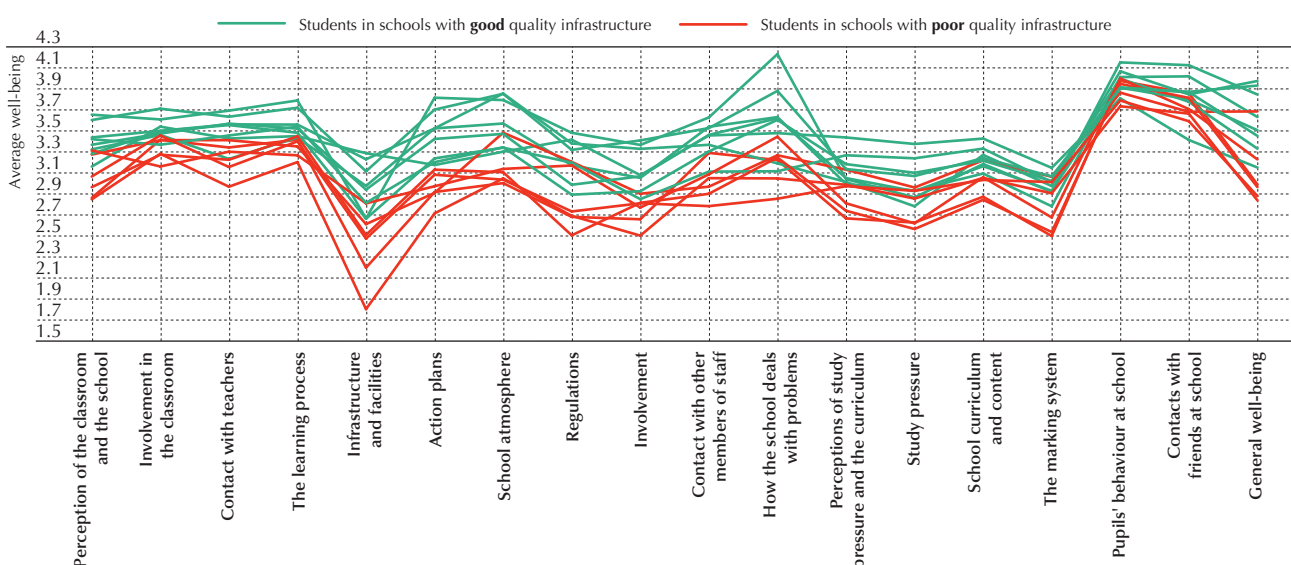
Again, we had to make choices, this time in relation to the concept of well-being. Once we had reviewed the international literature, variables were selected and average scores were estimated for general well-being, well-being related to the school atmosphere and well-being related to school infrastructure.

We used multilevel models to analyse the data and took into account the issue of hierarchy: students are based in classes and classes are based in schools. Students are individuals but they share a social context, *i.e.* their class and the school they attend. Because of this, students’ well-being is based on similar elements and they cannot be considered to be independent. With this in mind, multilevel models enabled us to investigate variance within schools and between schools (Maeyer and Rymenans, 2004; Pustjens *et al.*, 2004; Maeyer *et al.*, 2010).

## FINDINGS

Descriptive statistics reveal higher average scores for students who enjoy good quality school infrastructure compared with students who have poor quality infrastructure.

**Figure 1** Average scores for students with good quality school infrastructure compared to students with poor quality infrastructure



Analysis shows that there was a stark contrast in satisfaction levels between students attending schools with good quality infrastructure as compared with those in schools with poor infrastructure. Similarly, high levels of well-being were recorded among those attending schools which corresponded to the following criteria: “to the extent possible, possible the classrooms open onto a (green) outside area” and “the school building provides well-integrated ICT and easy access to various sources for research”; conversely, students attributed low scores to schools which fared badly on these aspects. Without a doubt, we were able to conclude that school infrastructure definitely contributes to the well-being of students.

Referring back to the first fundamental question raised earlier (“Can differences in students’ well-being be attributed to the quality of their school’s infrastructure?”), the answer is yes. Differences in students’ well-being can be linked to the quality of the infrastructure of the schools they attend. It follows that scores on well-being were significantly lower among students attending schools with poor quality infrastructure and schools with low scores on both variables (“to the extent possible, possible the classrooms open onto a (green) outside area” and “the school building provides well-integrated ICT and easy access to various sources for research”). Differences remain significant irrespective of student characteristics (gender, grade, type of education) and school characteristics (urbanisation and educational networks). So, regardless of these criteria, the quality of school infrastructure definitely has a strong impact on an individual’s perception of his well-being.

4

ICT integrated  
in classrooms



Rights reserved; © University of Antwerp

Our second question related to differences in well-being among students, irrespective of gender, grade and type of education. In this case, we found that only rarely do gender and grade affect results significantly. Differences in scores on well-being are the same for male and female students and for 9th grade and 10th grade students. On the other hand, in relation to types of education, we found that scores for well-being among art and general education students are higher than those of students in technical education. Furthermore, students in vocational education gave lower scores for their well-being related to school infrastructure. Could typical infrastructure requirements for training rooms have something to do with this?





Question three related to the school's characteristics. Here, we found that the effect of infrastructure remains, regardless of urbanisation. There is no difference in scores on well-being in rural and urban schools. A school with poor quality infrastructure will affect well-being in the same way, whether it be rural or urban.

Lastly, we asked if the impact of school infrastructure is the same for all students. In order to answer this question we investigated, for instance, whether the effect on well-being of attending a school with good quality school infrastructure is the same for male and female students, for arts students and vocational education students. On the whole we found that female students are more sensitive to school infrastructure than their male colleagues and that 9th grade students are more sensitive than 10th grade students. We also found that general education students are less sensitive than other students. One very specific finding was that vocational education students are much more sensitive to well-integrated information communication technology (ICT) compared with other students.



Skateboard lockers  
make life easier

Rights reserved; © University of Antwerp



Anyone for a picnic?

To summarise, the research team found empirical evidence to support the importance of school infrastructure on the well-being of students in the Belgian region of Flanders. Previous international research indicated that the subject was significant; this research takes it a step further by offering tentative findings on effects and tendencies. Although the present research has some limitations and more work is required in order to refine our findings, we hope nevertheless to have contributed to the body of scholarly research on the subject.

### References

- Engels, N. *et al.* (2004a), "Factors which influence the well-being of pupils in Flemish secondary schools", *Educational Studies*, Vol. 30, Issue 2.
- Engels, N. *et al.* (eds.) (2004b), *Graag naar school. Een meetinstrument voor het welbevinden van leerlingen secundair Onderwijs*, Brussels.
- Leemans, G. (2008), *De schoolgebouwenmonitor. Indicator voor de kwaliteit van schoolgebouwen in Vlaanderen*, AGIO, Garant, Brussels.
- Maeyer, S. (de), D. Kavadias and L. Coertjens (2010), *Open leerpakket Gevorderde analysetechnieken. Inleiding tot multilevel analyse*, University of Antwerp.
- Maeyer, S. (de) and R. Rymenans (2004), *Onderzoek naar kenmerken van effectieve scholen*, Academia Press, Gent.

## 6

*For more information, contact:*

*Katrien Cuyvers*

*Rozengaard 10*

*2550 Kontich*

*Belgium*

*E-mail: [katrien.cuyvers@gmail.com](mailto:katrien.cuyvers@gmail.com)*

*For further reading, see [here](#).*

# ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Commission takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

*This work is published on the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of the Organisation or of the governments of its member countries.*

ISSN 2072-7925

Corrigenda to OECD publications may be found on line at: [www.oecd.org/publishing/corrigenda](http://www.oecd.org/publishing/corrigenda).

© OECD 2011

---

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to [rights@oecd.org](mailto:rights@oecd.org). Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at [info@copyright.com](mailto:info@copyright.com) or the Centre français d'exploitation du droit de copie (CFC) at [contact@efcopies.com](mailto:contact@efcopies.com).

---