

Creating and Maintaining High Quality, Sustainable Healthy Learning Environments for Students, Teachers and Staff in Global Schools

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Abstract

The purpose of the study was examining and exploring ecological issues that emerge from disasters or high poverty schools and UNESCO'S mandate for health conditions in learning environments and 1) teacher and staff effectiveness, 2) student achievement, and 3) health of teachers, staff, and students. A systematic narrative literature method was used to review the effects that technological innovation and ecological conditions have on schools show there is a health risk. Results of preliminary research focused on USA schools revealed a high-quality teaching environment is expected to demonstrate five key conditions and five helping brain-based behaviors in teaching 1) lesson clarity, 2) instructional variety to address diversity, 3) healthy and safe learning environment, 4) engagement in the learning process, and 5) student success. Five helping behaviors included: 1) using student ideas and contributions, 2) structuring, 3) questioning, 4) probing, and 5) teacher competence. Methodology is introduced to gather evidence of the possible relationships between these variables and potential adverse effects of technological and ecological conditions teachers and students. The discussion shares findings on the potential implications for conditions in schools and communities that result from natural disasters. Such conditions include the impact of dampness and mold on individuals in schools or similar settings. This information could advance future research direction to investigate this problem of maintaining safe and healthy environments globally. The argument is that such conditions present thought-provoking implications for transforming learning environments into healthy and safe places for teachers and learners to be active and productive. Preliminary conclusions suggest that while technological and ecological innovations offer necessary advances to education, failure to acknowledge problems involving infrastructure, environmental conditions and the impact on individual's health could result in adverse effects on teaching and learning.

Keywords: Learning infrastructure; Student achievement; Teacher effectiveness; School ecology; Ecological conditions, Environmental health

Introduction

The importance of this topic is published widely by UNESCO learning projects on the relevance of healthy environments to achieve high quality education. Global problems affiliated with economic development, education, environment and health are closely related. Research on educational tourism initiatives evolving from natural disasters and the study of universal poverty worldwide are beginning to highlight the complex links between the social, economic, ecological and political factors that consistently drive standards of living and other aspects of social well-being that influence human health and education worldwide. UNESCO'S NGO groups, humanitarians and educational tourists are engaging dialogue about the need for healthy people, educated populations to live and learn in safe and peaceful environments as critical circumstances for a sustainable future [1].

At the beginning of the 21st century, the education of many children and young people around the world is compromised by conditions and behaviors that undermine the physical and emotional well-being that makes learning possible. Hunger, malnutrition, malaria, polio and intestinal infections, drug and alcohol abuse, violence and injury, unplanned pregnancy, HIV/AIDS and other sexually transmitted infections are just some of the health problems we face. As a result, education policy-makers and teachers must embrace health promotion activities to achieve their goals. Schools must be not only centers for academic learning, but also supportive venues for the provision of essential health education and services [1].

In this editorial, we report findings from numerous projects that have contributed to research on global schools in urban or rural

school culture, teacher and student performance and the need for reform. However, we also elevate the issue that too few have provided insight into the role of the role of ecological system, physical school environment or building quality in relationship to teacher effectiveness and learner performance. The driving question is, what are some potentially harmful ecological conditions in learning environments and the effect on 1) teacher and staff effectiveness, 2) student achievement and 3) health of teachers, staff, and students? Research on the effects that technological innovation and ecological conditions in schools show there is a health risk that could impeded learning and teaching in today's aging and new classrooms. The argument is that poor environmental or ecological conditions present thought-provoking implications for transforming learning environments in to healthy and safe places for teachers and learners to be active and productive as new technologies become pervasive in our schools. Are schools prepared to fully implement new school and instructional designs? The ideas presented have not been published in previous reviews in this journal.

This grounded theory in this paper emerged from the authors' involvement in the developing a funding proposal to study issues related to the above questions. The research here will share previous work in

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the field and begin a comprehensive discussion on the background of this problem and salient ideas about future research directions. The purpose is to advance conversation about how to identify solution-oriented and qualitative approaches to study, create and sustain an ecological system safe and healthy learning environments in schools as we plan to advance education into the 21st century.

Theoretical framework¹

This research is grounded in primarily systems thinking and ecological systems theory (Figure 1). The focus includes ideas directly incorporating microsystems, exosystems and macrosystems as lens to view how the school or learning environment's physical environment can affect the quality of health, teaching and learning in homes, schools and community.

Ecological systems: Theory holds that development reflects the influence of several environmental systems, and it identifies five environmental systems:

Micro system: The setting in which the individual lives. These contexts include the person's family, peers, school, and neighborhood. It is in the micro system that the most direct interactions with social agents take place; with parents, peers, and teachers, for example. The individual is not a passive recipient of experiences in these settings, but someone who helps to construct the settings.

Mesosystem: Refers to relations between microsystems or connections between contexts. Examples are the relation of family experiences to school experiences, school experiences to church experiences, and family experiences to peer experiences. For example,

¹ UN Office for the Coordination of Humanitarian Affairs: To learn more about OCHA's activities, please visit <http://unocha.org/>.
- See more at: <http://reliefweb.int/report/philippines/philippines-typhoon-haiyan-situation-report-no-13-19-november-2013#sthash.h12ARyNJ.dpuf>

children whose parents have rejected them may have difficulty developing positive relations with teachers.

Exosystem: Involves links between a social setting in which the individual does not have an active role in the individual's immediate context. For example, a husband or child's experience at home may be influenced by a mother's experiences at work. The mother might receive a promotion that requires more travel, which might increase conflict with the husband and change patterns of interaction with the child.

Macrosystem: Describes the culture in which individuals live. Cultural contexts include developing and industrialized countries, socioeconomic status, poverty, and ethnicity.

Chronosystem: The patterning of environmental events and transitions over the life course, as well as sociohistorical circumstances. For example, divorces are one transition. Researchers have found that the negative effects of divorce on children often peak in the first year after the divorce. By two years after the divorce, family interaction is less chaotic and more stable. As an example of sociohistorical circumstances, consider how the opportunities for women to pursue a career have increased during the last thirty years [2].

Background

This following sections report previous important work in the field and begins a limited yet, comprehensive discussion on the general background on how to engage an ecological study of repairing aged infrastructures, damaged or destroyed school environments to understand potential impact on individuals' health, teaching and learning. As an example, we discuss the salient features of recent developments using a commonly found condition, dampness, mold and the influence on health. The discussion then moves to research on quality learning environments, teacher effectiveness and student

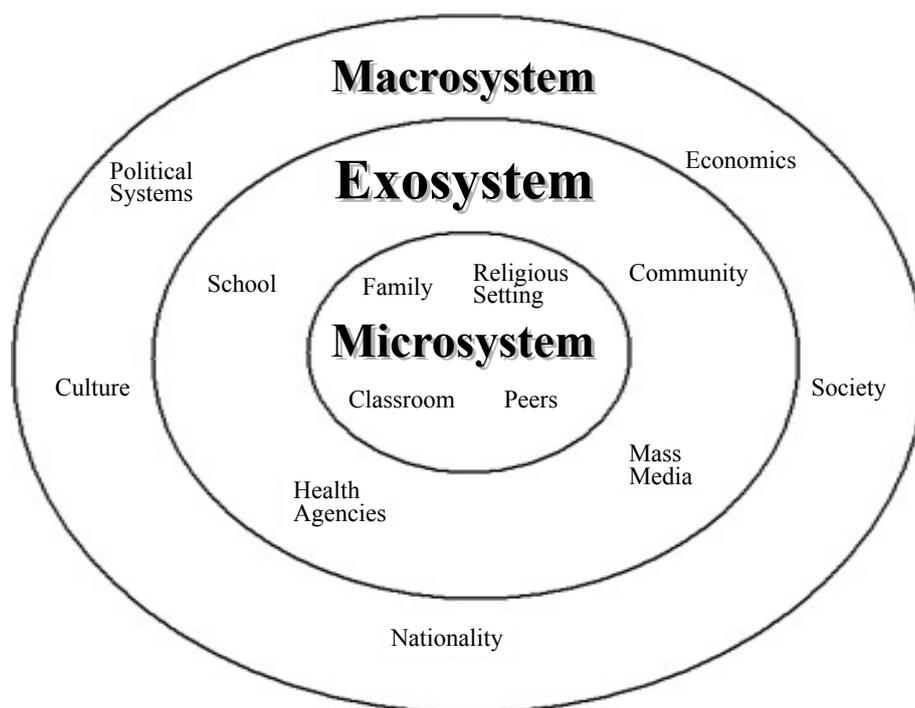


Figure 1: Bronfenbrenner's Ecological Systems Theory.

achievement variables that can be affected by physical conditions in the school or classroom. The research provides important information that global leaders must consider when establishing partnerships with business, industry or government to create new schools, repair damaged schools from natural disasters, aging or to modernize schools with 21st century technologies [3,4]. While there have been several studies that have addressed various aspects of teacher effectiveness and student achievement, there is limited research that relates how a school's physical environment relates to these outcomes. What is known is that a safe and healthy learning environment is a key condition to ensuring a high-quality teaching environment [5]. First, adequately maintained buildings devoid of excessive indoor air pollutants and mold have been associated with improved student learning, performance and health. Creating such favorable student outcomes can be challenging for many urban schools.

These schools are more likely to have underperforming and underachieving students who are less likely to acquire success later in life. This trend has regularly been partially explained as the consequence of exposure to home and academic environments that do not promote learning and academic achievement [6].

Case-in-Point: Dampness, Mold and Adverse Health

A recent Report, Philippines: Typhoon Haiyan Situation Report No. 13 (as of 19 November 2013) from UN Office for the Coordination of Humanitarian Affairs, shared the following highlights that left behind a myriad of ecological concerns for rebuilding homes, schools and communities. Relief Web is the largest humanitarian information portal in the world. Founded in 1996, the portal now hosts more than 500,000 reports². Given global warming, such disasters are happening far too often and require a systems approach to solution-finding by leaders [3].

Typhoon Haiyan, of whom over 4.4 million people are displaced from their homes, according to the Department of Social Welfare and Development, affects over 13.2 million people.

Phone networks have been restored in 85 per cent of 419 municipalities in the three worst affected regions of Central, Eastern and Western Visayas.

Electricity is improving but remains unavailable in some areas of Eastern Visayas region.

Infrastructure damage is severe. Over 1 million houses are damaged or destroyed.

An initial rapid assessment estimates that 80 to 90 per cent of schools in Aklan, Capiz and Iloilo provinces in Western Visayas are damaged or destroyed.

All municipalities in Leyte province are now accessible. In addition, 146 roads have been repaired and cleared of debris in MIMAROPA, Bicol and Eastern, Central and Western Visayas regions.

The Problem

This section summarizes the effects that dampness and mold can have on health. The emphasis is a synthesis of evidence on the potential adverse effects of dampness and mold on individuals in school and similar settings. A recent study, Indoor Air Quality (IAQ) and Student

[7] found evidence that continues to emerge showing how poor indoor air quality can cause illness requiring absence from school and can cause severe health symptoms that decrease performance while at school. In addition recent data suggests that poor IAQ may directly reduce an individual's ability to perform specific mental tasks requiring concentration, calculation or memory. Such mental tasks are required in all core subjects and especially the Science, Technology, Engineering and Mathematics curriculum (STEM). In addition, this research shows indoor temperature and relative humidity can also affect health and performance directly, and can affect human performance indirectly by influencing the airborne level of hazardous environmental elements such as mold and bacteria.

Methodology

A systematic literature review and professional observations contributed to the following analysis that describes the importance of studying the problem of creating and maintaining high quality, sustainable healthy learning environments for students and teachers in global schools, especially in areas where natural disasters and poverty are most prevalent.

The narrative review is systematic because it included a detailed search of the literature based upon a focused question and purpose. Primary and subtopics include: teacher effectiveness, evidence of relationship between teaching and learning effectiveness, healthy environments, student achievement and ecological conditions.

Informal professional observations

Over 25 years of participant observations emerged from the researcher's experience teaching in high poverty urban schools in America and as faculty member supervising preservice teachers who were placed in high poverty communities in Cincinnati, Ohio (USA) and Philadelphia, Pennsylvania and Chicago, Illinois. In addition, the researcher has traveled extensively to other countries and conducted research in the form of needs assessments to determine factors and conditions necessary to transform poor schools and teaching to high performing levels. The systematic literature review served to confirm these observations and provided information that led to a deeper understanding of about the risks that teachers and students experience when they work and study in schools with poor environmental conditions.

The following discussions will be followed by a summary for plan for action, recommendations and conclusions.

In 2007, a study, The Challenges of Staffing Urban Schools [in USA] with Effective Teachers conducted by a Harvard professor, Brian Jacobs found that research provides hard evidence that teachers in schools serving poor and minority children in large cities are more likely to be inexperienced, less likely to be certified, and less likely to have graduated from competitive colleges than are suburban teachers and that the most effective teachers are likely to leave in the first five years [8]. They also score lower on standardized exams and are more likely to be teaching subjects for which they are not certified. Important factors that define teacher or teaching effectiveness have evolved from many experts in the field. In addition, teacher absenteeism, an indicator of morale and health related conditions are reportedly more of a problem in urban schools than in suburban or rural schools, and in urban high poverty schools compared with rural high poverty schools globally. Another United States Department of Education (USDE) study, Status and Trends in the Education of Racial and Ethnic Groups [9] examined the educational progress and challenges of students

² www.unocha.org The mission of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) is to mobilize and coordinate effective and principled humanitarian action in partnership with national and international actors.

[with a focus on urban schools] in the United States by race/ethnicity reported the following:

In 2007–08, about 25 percent of secondary mathematics teachers who taught in schools with at least half Black enrollment had neither a certification nor a college major in mathematics, compared to 8 percent of secondary mathematics teachers who taught in schools with at least half White enrollment (Indicator 9.1) (p. iv).

The National Council of Association of Teacher Educators (NCATE, 2010-2013) describes teachers effectiveness factors as teacher preparation/knowledge of teaching and learning (pedagogy), subject matter knowledge, experience, and the combined set of qualifications measured by teacher licensure are all leading factors in teacher effectiveness [10]. In addition, a high-quality teaching environment is expected to demonstrate five key conditions and five helping behaviors in teaching. The five key conditions are: 1) lesson clarity, 2) instructional variety to address diversity, 3) healthy and safe learning environment, 4) engagement in the learning process, and 5) student success. The five helping behaviors are: 1) using student ideas and contributions, 2) structuring, 3) questioning, 4) probing, and 5) teacher competence [11]. Evidenced-based support for these criteria is embodied in the Charlotte Danielson's Framework for Effective Teaching-CDFET [12]. Most important, reliability and validity data on the CDFET has been gathered from educators, school leaders and policy makers to identify a coherent, clear set of standards that define effective teaching. The teacher effectiveness system incorporates tools that help teachers reflect upon, understand, and enhance their practice, ultimately impacting student achievement. Danielson's Framework for Teaching defines a comprehensive set of teacher effectiveness responsibilities including the classroom environment as a critical factor connected to increasing student learning. Four Domains make up the criteria for defining, assessing and evaluating teacher effectiveness: Planning and Preparation, Classroom Environment, Instruction, and Professional Responsibilities [13].

Summary of existing evidence regarding the relationship between teacher effectiveness and building quality (With an emphasis on dampness and mold)

Numerous projects have contributed to research on school culture, school, teacher and student performance and the need for reform, but few have provided insight into the role of the physical school environment or building quality in relationship to teacher effectiveness. Research from studies of large and small schools in diverse communities indicate it is important to understand relationships between physical factors such as dampness and mold in school buildings is critical to transforming learning environments into healthy, safe and productive teaching, learning and work places for teachers, students and staff. A study, *The Evaluation Of Green School Building Attributes And Their Effect On The Health And Performance Of Students And Teachers In New York State* found that "high CO₂ levels measured in classrooms were significantly associated with teachers reporting many and multiple health symptoms [14]. Teachers who felt their symptoms affected teaching ability were more likely to teach in a classroom with higher measured levels of CO₂ although it was not statistically significant.

Another study, *Identification Of Mold And Dampness-Associated Respiratory Morbidity In 2 Schools: Comparison Of Questionnaire Survey Responses To National Data* [15], showed that many health symptoms reported by teachers appear to be work-related and affected their performance. Teacher's health related symptoms were

highly associated with health problems that result from mold and dampness. This proposed research project is intended to address the need for improved understanding of the associations between physical environment conditions, teacher effectiveness and student academic achievement. An important step in the process of determining the extent to which physical environmental conditions contribute to teacher effectiveness and student academic achievement is to improve understanding of the existence of unhealthy physical conditions in their schools. This includes identifying the role dampness and mold play in relationship to teachers' effectiveness and students' performance based on their academic achievement.

Importance of high quality school environments

A high-quality learning environment for both teachers and students in a classroom is a fundamental attribute of the educational process. An accepted measure for assessing or evaluating teacher effectiveness is how well a teacher is able to create and maintain an environment conducive to learning. In addition, CDFET was used in the Bill Gates Foundation Measures of Effective Teaching (MET) project to assess teaching effectiveness with a random, national sample of over 3,000 teachers. The Measures of Effective Teaching (MET) project was a three-year study designed to determine how to best identify and promote great teaching. The study found that this comprehensive framework respects the complexity and significance of the teaching profession including the five key conditions and five helping behaviors. The results demonstrated that it is possible to identify effective teaching by combining multiple measures: principal and teacher surveys, classroom observations, student surveys, and student achievement gains.

Although the seminal works of MET, NCATE, Darling-Hammond and Danielson provide valuable, evidenced-based information that helps to define and evaluate teacher effectiveness, a gap in knowledge about the potential phenomenal relationship between teacher effectiveness and environmental conditions remains unknown for many international or global schools not only in USA but around the world. In result, an important component of this research will be to identify factors that show the relationship between environmental conditions and the teacher's ability to create and maintain a high quality and effective teaching and learning environment. Although it is known that exposure to certain physical environmental factors such as mold and dampness can affect a school's performance [16-19] further work is needed to better describe the associations between specific environmental conditions and performance outcomes included in evaluating a teacher's effectiveness.

Student achievement

A National Center for Educational Statistics report, *Urban Schools: The Challenge of Location and Poverty* [20] reports there is the perception, fed by numerous reports and observations that urban students achieve less in school, attain less education, and encounter less success in the labor market later in life.

Researchers and educators often link this perceived performance of urban youth to home and school environments that do not foster educational and economic success. Moreover, urban educators report the growing challenges of educating urban youth who are increasingly presenting problems such as poverty, limited English proficiency, family instability, and poor health. Finally, testimony and reports on the condition of urban schools feed the perception that urban students flounder in decaying, violent environments with poor resources, teachers, and curricula, and with limited opportunities (p. v).

Student achievement or growth is defined as by U.S. Department of Education “as student results on pre-tests, end of course tests, objective performance-based assessments and performance on student learning objectives, as well as student performance on English language proficiency assessments (<http://www.ed.gov/race-top/district-competition/definitions>).” Maintaining an environment free of poor environmental conditions such and mold and dampness in which students can achieve to their greatest potential has been statistically linked to high quality student learning, retention and health. An earlier referenced study, Identification Of Mold And Dampness-Associated Respiratory Morbidity In 2 Schools: Comparison Of Questionnaire Survey Responses To National Data [21], shows that good condition of air filters, lighting and dryness, and high IAQ scores have been related to good test scores, school attendance and behavioral problems—all factors that influence student achievement. Students with asthma are especially sensitive to these bacteria that can produce allergens from mold and dampness that can trigger health issues that leads to absenteeism and lack of achievement brought on by the inability to perform due to unsafe environmental health conditions as evidenced by a study, Respiratory and Allergic Health Effects of Dampness, Mold, and Dampness-Related Agents: A Review of the Epidemiologic Evidence states, “Evident dampness or mold [has] consistent positive associations with multiple allergic and respiratory effects [22]

Most studies that research the problem of mold and dampness in schools or institutions seem to employ a stratified cross sectional design, which compares health outcome among occupants of damp or moldy schools to health outcomes among occupants of reference dry schools [23]. Most studies revealed that during implementation of the study, schools were able to control for a fairly broad range of potential confounding factors [23]. Researchers estimate that approximately 4.6 million cases of asthma in the USA result from exposure to dampness and mold and that the resulting economic cost of this health impact is approximately \$3.5 billion annually [23]. Public policies and programs can reduce these impacts by both preventing moisture and mold problems in buildings and mitigating them when they do occur to reduce the number of students who attend classes under these conditions, which can increase the opportunity to improve student achievement in urban schools [24]. More important, this research indicates a gap in knowledge consensus about the effects of mold and dampness on student achievement making this study highly relevant and significant to answer such critical health and environmental questions about providing a high quality learning and teaching environment in urban schools.

Recommendations for research

The following outline emerged from an unpublished grant proposal and provides insight into a process for designing research and methodology to study the problem of how a school’s physical environment relates to these outcomes. Such research could investigate three areas:

1) Evaluate the extent to which differences between schools in teacher effectiveness and student achievement can be attributed to dampness and mold.

This aim would be completed through a retrospective analysis of existing data from no less than representative samples from urban or rural schools. Data analysis would occur at the school building level. It is anticipated that teacher effectiveness and student achievement would both decrease with presence of mold and dampness. It is also anticipated that factors could be identified that mediate the relationships

between environmental conditions, (i.e., mold and dampness), teacher effectiveness and student achievement.

2) Evaluate the extent to which differences between-classes within a school in teacher effectiveness and student achievement can be attributed to dampness and mold.

This aim would be completed prospectively through the evaluation of matched sets of high- and low-performing public primary and secondary schools. Environmental conditions, student performance and teacher effectiveness could be evaluated 4 times per year over a 2 year period at the classroom level. This aim will be complemented by rich contextual data that could help interpret between-school associations. It is anticipated that teacher effectiveness and student achievement might both decrease with presence of mold and dampness at the classroom level and that these relationships could vary between low- and high-achieving schools.

3) Evaluate the impact of air quality conditions on the respiratory health of teachers and students.

It is anticipated that indicators of poor indoor air quality could be associated with increases in student cases of asthma reported by school nurses. Likewise, teacher and staff respiratory health may be associated with poor indoor air quality. Other known asthma triggers and conditions known to adversely affect respiratory health contribute to associations with physical conditions such as dampness and mold should be examined in the study [25].

Summary

Action research plan to study the problem

The following outline represents an outline that could be used to plan a grounded theory study to further explore, examine or observe the phenomenon described in this paper.

Title: Grounded Theory: The Impact of School Environmental Conditions on Teacher Effectiveness and Academic Achievement of Students in Selected Global Schools

A. Teacher Effectiveness

What can we use to assess teacher effectiveness?

Measures of Teacher Effectiveness (MET Series)

Principal Survey

Student Survey

Teacher Survey

Staff Survey (would need to identify one- not included in MET series but could be easily developed based on structure of other surveys in the series) Available: <http://www.metproject.org/>

Data from any existing or past studies that include this variable

What other information would be desirable to measure teacher effectiveness?

Classroom observations and teacher reflections

Teacher Performance Reviews

Teacher Improvement Plans (TIPs) Review

What percentage or how many teachers have been on TIPs?

Climate Studies or Data on Teacher Satisfaction in the schools

Distribution of teachers by performance levels of local education agency (LEA) teacher evaluation system (E.g. High Quality, Proficient, Not proficient)

Teacher attendance rate

B. Student Performance Assessment (Achievement)

Individual gains on state standardized tests and supplemental tests

School's Annual Yearly Progress (AYP) on standardized tests

Supplemental assessments given by the school/district (Which ones?)

Attendance records

Dropout rate

Attendance rate

Discipline incidents

Truants

Student completing advanced placement coursework (AP)-early college or dual enrollment classes

Data Collection Methods

Quantitative

Surveys

Test Scores

Checklists

Records

Document reviews

Databases

Qualitative

Site visits and interviews

Central office staff, school board members

School principals

Teachers

Focus groups with community leaders or other stakeholders/partners

Students

Parents

Observations

Classroom

School community

Facilities

School grounds/buildings

Conclusions

In conclusion, this limited systematic narrative literature review and theoretical papers supports the need to develop a research agenda. Such an agenda would aim to discover how to control, develop and sustain high quality physical environmental conditions in both new and

existing construction because of the significant health consequences that can result from ecological and technological conditions.

Although this paper focused on mold and dampness as an example of conditions from disasters such as typhoons, the problems extend beyond dampness and mold that can impact the quality of the learning and work environments, teaching effectiveness, student achievement in urban schools and new technological innovations in schools.

We must follow-up these preliminary findings with empirical studies to confirm the extent of the problem in global schools around the world to learn more about ecological conditions that are necessary to transform poor performing schools, teachers and students into high performing ecosystems.

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References

1. UNESCO (2001) Improving Learning Outcomes by Improving Health and Nutrition: Incorporating the FRESH Approach in National Action Plans for Achieving Education for All.
2. Santrock JW (2007) A Topical Approach to Life-Span Development. New York, NY: McGraw-Hill.
3. A recent Report, Philippines: Typhoon Haiyan Situation Report No. 13 (as of 19 November 2013) from UN Office for the Coordination of Humanitarian Affairs, Published on 19 Nov 20.
4. Typhoon Haiyan Situation Report No. 13, 2013).
5. NCATE Report. (2010-2013).
6. Hernando Perez (2013) The Impact of School Environmental Conditions on Teacher Effectiveness and Academic Achievement of Students: Grant Proposal Draft. Drexel University. Philadelphia, PA. USA. Unpublished.
7. Jacob BA (2007) The Challenges Of Staffing Urban Schools With Effective Teachers. *The Future Of Children*, 17(1), 129-153. In United States Environmental Protection Agency (2003- revised). Indoor Air Quality and Student Performance. Indoor Environmental Divisions. Office of Radiation and Indoor Air. Pp. 1.
8. Jacob BA (2007) The challenges of staffing urban schools with effective teachers. *Future Child* 17: 129-153.
9. Aud S, Fox MA, National Center for Education Statistics (2010) Status and Trends In The Education of Racial And Ethnic Groups. Washington, D.C.: National Center For Education Statistics, Institute Of Education Sciences, U.S. Dept. Of Education.
10. Darling-Hammond L (2006) Powerful Teacher Education: Lessons From Exemplary Programs. San Francisco, Calif: Jossey-Bass.
11. Ouyang J (2013) Effective Teaching Definitions.
12. Charlotte Danielson's Framework for Effective Teaching-CDFET (Danielson & ebrary, 2007, 2008) [12].
13. Danielson C, Ebrary I (2008) The Handbook For Enhancing Professional Practice: Using The Framework For Teaching In Your School. Alexandria, VA: Association For Supervision & Curriculum Development (ASCD).
14. Shao Lin, Kielb, Orsini, & Muscatello (2013) The evaluation of green school building attributes and their effect on the health and performance of students and teachers in New York State, 4.
15. Sahakian NM, White SK, Park JH, Cox-Ganser JM, Kreiss K (2008) Identification of mold and dampness-associated respiratory morbidity in 2 schools: comparison of questionnaire survey responses to national data. *J Sch Health* 78: 32-37.
16. Jones SE, Axelrad R, Wattigney WA (2007) Healthy and safe school environment, Part II, Physical school environment: results from the School Health Policies and Programs Study 2006. *J Sch Health* 77: 544-556.

17. Tanner CK (2008) Explaining Relationships among Student Outcomes and the School's Physical Environment. *Journal of Advanced Academics*, 19: 444-471.
18. Uline CL, Wolsey TD, Tschannen-Moran M, Lin CD (2010) Improving the Physical and Social Environment of School: A Question of Equity. *Journal of School Leadership* 20: 597-632.
19. Evans GW (2006) Child development and the physical environment. *Annu Rev Psychol* 57: 423-451.
20. Lippman L (1996) Urban Schools: The Challenge Of Location And Poverty / Laura Lippman, Shelley Burns, Edith McArthur ; With Contributions By Robert Burton, Thomas M. Smith, Phil Kaufman.
21. Sahakian NM, White SK, Park JH, Cox-Ganser JM, Kreiss K (2008) Identification of mold and dampness-associated respiratory morbidity in 2 schools: comparison of questionnaire survey responses to national data. *J Sch Health* 78: 32-37.
22. Mendell MJ, Mirer AG, Cheung K, Tong M, Douwes J (2011) Respiratory and allergic health effects of dampness, mold, and dampness-related agents: a review of the epidemiologic evidence. *Environ Health Perspect* 119: 748-756.
23. Mudarri D, Fisk WJ (2007) Public Health and Economic Impact of Dampness and Mold. *Indoor Air*, 17(3), 226-235.
24. Responses to National Data. *The Journal of School Health* 78(1): 32-37.
25. Perez, Hilton, Pittman (2013) Unpublished Grant Proposal Literature Review Drexel University. Philadelphia, PA, USA.