

CHAPTER 2

PIRLS 2016 Context Questionnaire Framework

Martin Hooper, Ina V.S. Mullis, and Michael O. Martin

PIRLS collects extensive information about the home and school contexts for learning to read, providing educational policy makers important insights into how educational systems can be improved to foster reading achievement. The PIRLS 2016 Context Questionnaire Framework establishes the foundation for the background information collected through the context questionnaires and the *PIRLS 2016 Encyclopedia*.

In order to collect the PIRLS background information, all students participating in PIRLS/PIRLS Literacy and their parents, teachers, and principals complete questionnaires to provide data about the students' home and school contexts for learning to read. Students also participating in ePIRLS complete a short supplementary questionnaire that focuses on student computer use. In addition, representatives from participating countries complete a curriculum questionnaire and contribute a chapter to the *PIRLS 2016 Encyclopedia*. The curriculum questionnaire and *PIRLS 2016 Encyclopedia* entries provide important information on each country's educational policy, reading curriculum, and other national contexts that shape reading instruction and student learning. Chapter 3 provides an overview of the procedures for collecting background information.

The context questionnaires that accompany the reading assessment are an essential component of PIRLS data collection. The questionnaires cover a wide array of policy-relevant information about the country's various contexts for teaching and learning reading. The data on home supports for learning as well as on educational system structure, school organization, curricula, teacher education, and classroom practices are considered in relation to student

achievement and compared across countries. This information can provide insight into effective educational strategies for development and improvement.

Students in the fourth year of schooling typically have gained most of their reading skills at school and at home. Community, school, classroom, and home environments that support each other can create extremely effective climates for learning. In order to reflect this situation, the PIRLS 2016 Context Questionnaire Framework encompasses five broad areas:

- National and community contexts;
- Home contexts;
- School contexts;
- Classroom contexts; and
- Student characteristics and attitudes toward learning.

National and Community Contexts

Cultural, social, political, and economic factors all contribute to the backdrop of a student's literacy acquisition. At the national and community level, key educational policy decisions are made about how best to implement the curriculum, given these contextual factors. The success a country has in providing effective reading instruction depends on a number of interrelated national characteristics and decisions:

- Language(s) and emphasis on literacy;
- Economic resources, population demographics, and geographic characteristics;
- Organization and structure of the educational system;
- Student flow;
- Reading curriculum in the primary grades;
- Teachers and teacher education; and
- Monitoring curriculum implementation.

Language(s) and Emphasis on Literacy

The historical background of language and literacy in a country can influence the challenges and instructional practices in teaching students to read. For example, some countries have one commonly spoken language, while others are historically multilingual. Immigration also can increase language diversity.

Multilingual countries across the world have different policies for educating their population. Thus, decisions about the language(s) of instruction and how to implement those decisions can be very complicated. Studies consistently have shown a learning gap associated with students who do not speak the language of instruction in the home (Entorf & Minoiu, 2005; Schnepf, 2007; Trong, 2009).

Economic Resources, Population Demographics, and Geographic Characteristics

A country's economic resources, demographic characteristics, and geographic characteristics can have a tremendous impact on the relative ease or difficulty of promoting literacy.

- **Economic Resources**—Countries have different levels of wealth and vary in how that wealth is distributed. At the national level, economic resources and socioeconomic equity tend to be linked to favorable contexts for fostering student achievement. Having economic resources enables better educational facilities and a greater number of well-trained teachers and administrators. Financial resources also provide the opportunity to invest in education through widespread community programs and by making materials and technology more readily available in classrooms.
- **Population Demographics**—The size and diversity of a country's population can increase the challenges involved in curriculum implementation. Some countries have a diversity of ethnic groups, cultures, and languages, and immigration movements can add to the diversity of the population. The curriculum and the educational system must be flexible enough to foster literacy acquisition for this heterogeneous population.
- **Geographic Characteristics**—The sheer size of a country can pose challenges to curriculum implementation. This is especially true if part of the population is isolated in remote parts of the country.

Organization and Structure of the Educational System

Some countries have highly centralized educational systems in which most policy-related decisions are made at the national or regional level. In these systems, often there is a great deal of educational uniformity in terms of curriculum, textbooks, and general policies. Other countries have more decentralized systems in which many important decisions are delegated to

local governments and schools. This decentralized structure results in greater variation in how schools operate and how students are taught. Research has found that the level of centralization of standardized assessments tends to be associated with greater educational equality (Van de Werfhorst & Mijs, 2010) and higher student outcomes (Bishop & Wößmann, 2004; Jürges, Schneider, & Büchel, 2005).

Student Flow

Student flow refers to how students in an educational system progress through school. For PIRLS 2016, the student flow themes that are highly relevant include preprimary education, age of entry, the prevalence of grade retention, and student grouping.

- **Preprimary Education**—Even before they begin formal primary school, children may receive considerable exposure to literacy as part of their preprimary educational experience. As described in the *PIRLS 2011 Encyclopedia* (Mullis, Martin, Minnich, Drucker, & Ragan, 2012), countries vary dramatically in their policies and practices with regard to early (preprimary) education. PIRLS 2011 supported research findings indicating that preprimary school can have a positive effect on academic achievement during primary school (Berlinski, Galiani, & Gertler, 2009; Tucker-Drob, 2012), with longer duration of preprimary education associated with higher achievement (Sammons et al., 2002).
- **Age of Entry**—Policies about the age of entry to formal education (first year of primary school, ISCED Level 1) are important for understanding the variation in students' ages across countries at the fourth grade (Martin, Mullis, & Foy, 2011), as are policies concerning promotion/retention (see below). Typically across the PIRLS countries, students enter school at ages 5 to 7. Students entering school at older ages may have an advantage at the fourth grade for several reasons. For example, they have had the opportunity for more years of preprimary education than those students beginning school at younger ages. Also, they may have had the opportunity for more reading instruction upon beginning the first grade of primary school because they are more mature and able to cope with the complex cognitive demands of reading instruction.
- **Grade Retention**—Grade retention practices differ among countries. This variation has been explained as an effect of differing educational policies, cultural norms, and diverging perspectives on the advantages

of holding students back (Goos et al., 2013). Because PIRLS is a grade-based study, the degree of grade retention can be an important factor to consider when evaluating achievement results. Research has shown that grade retention does not have a positive relationship with student achievement or the emotional wellbeing of the student (Hattie, 2009; Jimerson, 2001).

- **Grouping for Reading Instruction**—Generally, small-group instruction can improve reading ability (Lou, Abrami, & Spence, 2000; Puzio & Colby, 2010). For example, in the guided reading approach to small group reading instruction, teachers form small groups that are focused on instruction involving a specific skill or strategy rather than on reading ability alone. This type of flexible within-class grouping allows for differentiation in order to address the needs of each individual student.

Homogenous grouping by ability is thought to support students in learning at a pace that reflects their skills in the subject. However, research has found that grouping students by reading ability in elementary school is beneficial for high achieving students but has negative consequences for low performing students (Catsambis & Buttaro, 2012; Lleras & Rangel, 2009). In contrast, low ability students may perform best in heterogeneous groups (Lou et al., 1996).

Reading Curriculum in the Primary Grades

Whether formulated at the national, community, or school level, curricular documents define and communicate expectations for students in terms of the knowledge, skills, and attitudes to be developed or acquired through their formal reading instruction. Policies may range from those governing the grade in which formal reading instruction begins to those that prescribe the types of material and the methods to be used in teaching reading.

Curricular aspects and governing policies particularly relevant to the acquisition of reading literacy include standards or benchmarks established for reading development, prevalence of school and classroom libraries, instructional time, methods and materials, and ways of identifying students in need of remediation. Considerable research evidence indicates that students' academic achievement is closely related to the rigor of the curriculum. This involves a coherent progression of instruction and materials through the grade levels, including emphasis on decoding and comprehension strategies, and

access to a variety of reading materials. Effective methods for disseminating the curriculum to teachers, parents, and the general public are important, as are ways for making sure that revisions and updates are integrated into instruction.

Especially relevant to ePIRLS is the extent to which a country's curriculum emphasizes online reading, digital reading, and computer skills. Some countries have transformed their standards and curriculum in order to address new media, including teaching elementary school students basic computer skills, such as typing and using a mouse, as well as how to retrieve information via the Internet, and how to use the computer for learning. Other countries place less emphasis on teaching these skills to young students.

Teachers and Teacher Education

Policies on teacher education can facilitate the successful implementation of the intended curriculum, and PIRLS collects information about how countries educate teachers in the content and pedagogical approaches specified in the curriculum. As described in the *PIRLS 2011 Encyclopedia*, such preparation and training may be an integral part of the teacher education curriculum or it may be included in professional development programs for practicing teachers. The requirements to become a primary teacher may include certain types of academic preparation, passing an examination, or meeting other certification criteria. Some countries also have induction or mentoring programs for entering teachers and a number of opportunities for ongoing professional development in order to keep teachers apprised of current developments.

Monitoring Curriculum Implementation

Many countries have systems in place for monitoring and evaluating curriculum implementation, and for assessing student achievement. Commonly used methods include national or regional standardized tests, school inspections, audits, feedback from students and parents, and teaching observations.

Home Contexts

Much research has provided insight into the importance of home environments for reading literacy development. In order to better understand the effects of the home and intergenerational literacy transmission, PIRLS collects data through both the student questionnaire and the Learning to Read Survey, completed by the student's parents or caregivers. Through these two questionnaires, information is gathered on the following:

- Home resources for learning;
- Language(s) spoken in the home;
- Parental educational expectations and academic socialization;
- Early literacy activities and early numeracy activities; and
- Home reading support.

Home Resources for Learning

Home resources for learning encompass important socioeconomic characteristics of the parents, such as their education level, together with home supports for learning and emphasis on educational activities. In educational research, the most influential background factors on student achievement tend to be those that measure socioeconomic status of the parents or caregivers, often indicated through proxy variables such as parental level of education, income, occupational class, and, more generally, home resources such as access to technology, the Internet, and books, including children's books (Bradley & Corwyn, 2002; Dahl & Lochner, 2012; Davis-Kean, 2005; Sirin, 2005; Willms, 2006).

PIRLS has confirmed that there is a sizable association between students' home resources for learning and their reading achievement. For PIRLS 2011, the home resources for learning scale was comprised of the following indicators: parents' education, parents' occupation, the number of books in the home, the number of children's books in the home, and study supports including an Internet connection and the students having a room of their own (Mullis et al., 2012).

Students increasingly have access to new digital media such as ebooks, tablets, and smart phones (Gutnick, Robb, Takeuchi, & Kotler, 2011; Rideout, Foehr, & Roberts, 2010). Research has shown that parents generally are accepting of children spending their time playing on digital media, including certain video games, because they believe that such activities lead to proficiency with computers and technology—important skills for academic and career success (Takeuchi, 2011).

Research still is emerging on the relationship between access to new technology in the home and academic achievement in general, as well as increased reading literacy in particular. Research has shown general computer use to be associated with reading achievement (Lee, Brescia, & Kissinger, 2009). It is believed that, if used correctly, educational applications (apps) for mobile

and other new media devices also can be effective, supplementary early learning tools for young children (Chiong & Shuler, 2010; Lieberman, Bates, & So, 2009). As such, there is concern that students with less home access to these costly resources are further disadvantaged in the classroom environment, leading to greater inequity in educational systems (Leu et al., 2009).

Language(s) Spoken in the Home

Because learning to read is dependent on children's early language experiences, the language or languages spoken at home and how they are used are important factors in reading literacy development (Bialystok, 2006; Hoff & Elledge, 2005). If students are not fluent in the language of instruction, often there is at least an initial learning gap because students must learn the concepts and content of the curricula through a new language (Entorf & Minoiu, 2005; Schnepf, 2007; Trong, 2009), with language learners most disadvantaged in subjects with greater language demand, such as reading lessons (Abedi, 2002).

Parental Educational Expectations and Academic Socialization

Parents convey their expectations to their children and provide educational goals for them (Hong & Ho, 2005; Jeynes, 2005). Academic socialization is the process of stressing the importance of education, and includes parents and children talking about the value of education, discussing future educational and occupational expectations for the child, and helping children draw links between schoolwork and its real-world applications (Hill & Tyson, 2009; Taylor, Clayton, & Rowley, 2004).

Academic socialization also can be subject-specific. Research has found that parental socialization in reading is especially important in fostering student achievement in reading (Kloosterman, Notten, Tolsma, & Kraaykamp, 2010). Parents impart their own beliefs about reading that shape children's motivation to read (Baker & Scher, 2002). Socialization can be subtle (e.g., young children seeing adults reading or using texts in different ways learn to appreciate and use printed material) and this process can have long term effects on a student academic performance (Kloosterman et al., 2010).

Early Literacy Activities

In addition to academic socialization, early parental involvement in children's literacy activities can impact early literacy development and can have long-lasting effects on children's literacy as they age (Melhuish et al., 2008; Sénéchal & LeFevre, 2002). Perhaps the most common and important early literacy activity

involves adults and older children reading aloud with their young children (Federal Interagency Forum on Child and Family Statistics, 2013; Raikes et al., 2006). By reading with children, children are asked engage with the text and pictures in books; they learn that printed text conveys meaning and that being able to read is valuable and worthwhile, and this experience can increase student motivation to read (Sonnenschein & Munsterman, 2002). In addition, a young child's exposure to oral language is important for literacy acquisition (Hart & Risley, 2003). As children develop their capacity for oral language, they are learning the rules of language use, and this can facilitate the development of literacy skills.

PIRLS has found a positive relationship between early literacy activities in the home and student achievement at the fourth grade. PIRLS routinely asks parents how often they engaged their child in early literacy activities, including reading books, telling stories, singing songs, playing with alphabet toys, talking about things they had done, talking about what they read, playing word games, writing letters or words, and reading aloud signs and labels. For example, the PIRLS Early Literacy Activities Scale, based on these PIRLS 2011 items, was positively related to reading achievement in almost every country (Mullis et al., 2012).

A recent study based on based on TIMSS and PIRLS 2011 data from 34 countries, as measured by the PIRLS Early Literacy Activies Scale (Gustafsson, Hansen, & Rosén, 2013), also showed that engaging children in literacy activities was an important explanatory link in the relationship between parental education and later student achievement at the fourth grade.

Home Reading Support

After children enter formal schooling, reading activities in the home can complement what the child is learning in school (Darling & Westberg, 2004; Kim & Quinn, 2013). Parental intervention in reading has been found to be especially efficacious when educators train parents in specific activities that they can do with their child to promote literacy acquisition (Darling & Westberg, 2004; Sénéchal & Young, 2008; Van Steensel, McElvany, Kurvers, & Herppich, 2011). Parents also can assist their children in their literacy development by listening to their children when they read books aloud (Sénéchal & Young, 2008).

In some countries, it is also common for parents to enroll their children in shadow education programs, private tutoring or classes outside of formal schooling that supplement the academic instruction a child receives at school

(Bray, 1999; Stevenson & Baker, 1992). The purpose for enrolling students in this supplemental schooling varies. Some parents enroll students in programs for remedial work in order for the students to keep pace with their classmates. Other parents hope that additional instruction can make up for any shortcomings in the education provided by the child's school (Baker, Akiba, LeTendre, & Wiseman, 2001). Increasingly, parents enroll students in shadow education programs with the goal of having their children master the curriculum in order to excel on an important examination (Baker & LeTendre, 2005; Buchman, Condrón, & Roscigno, 2010), especially where students compete for limited educational opportunities in a tracked program (Baker & LeTendre, 2005).

School Contexts

A school's environment and organization can influence the ease and effectiveness of reaching curricular goals. Accepting that an effective school is not simply a collection of discrete attributes, but rather a well-managed integrated system where each action or policy directly affects all other parts, PIRLS focuses on a set of well-researched school quality indicators:

- School location;
- School composition by student socioeconomic background;
- Instruction affected by resource shortages;
- Teacher working conditions and job satisfaction;
- Principal leadership;
- School emphasis on academic success; and
- Safe, orderly, and disciplined school.

School Location

Depending on the country, schools in urban areas may have access to more resources (e.g., museums, libraries, bookstores) than schools in rural areas. In some countries, schools in urban areas may provide for a more supportive environment because of better staffing conditions and the student population coming from economically more advantaged backgrounds (Erberber, 2009; Johansone, 2009). In contrast, in other countries, schools in urban areas are located in neighborhoods with considerable poverty, little community support, and sometimes even in areas of considerable crime and violence (Milam, Furr- Holden, & Leaf, 2010).

School Composition by Student Socioeconomic Background

Since the Coleman report (Coleman et al., 1966), there has been a great emphasis on how the socioeconomic status of the collective students in the school can influence individual student achievement (Martin, Foy, Mullis, & O'Dwyer, 2013; Rumberger & Palardy, 2005; Sirin, 2005). The correlation between lower socioeconomic status and lower achievement may be able to be partially explained by other school factors. For example, in some countries, schools with students from lower socioeconomic status are taught by less qualified teachers (Akiba, LeTendre, & Scribner, 2007; Clotfelter, Ladd, & Vigdor, 2010). Another theory purports that some schools with many socioeconomically disadvantaged students can be overwhelmed by a culture of futility, in which education and schooling are viewed as an antagonistic exercise having little or no future value (Agirdag, Van Houtte, & Van Avermaet, 2012).

Instruction Affected by Resource Shortages

The extent and quality of school resources also are critical for quality instruction (Greenwald, Hedges, & Laine, 1996; Lee & Barro, 2001; Lee & Zuze, 2011). These may include resources as basic as well-trained teachers or adequate classroom space and other school facilities (Schneider, 2002). Results from PIRLS indicate that students in schools that are well resourced generally have higher achievement than those in schools where shortages of resources affect the capacity to implement the curriculum. Two types of resources—general and subject-specific—affect curriculum implementation. General resources include teaching materials, supplies, school buildings and grounds, heating/cooling and lighting systems, classroom space, audio-visual equipment such as electronic white boards and projectors, and computers, including tablets such as *iPads*. Subject-specific resources for reading include reading materials such as books and ebooks, magazines and periodicals, and digital resources such as educational software/applications (apps) and subscriptions to educational websites. With the importance of online reading for informational purposes, student access to computers, the Internet, and support for their online educational research are increasingly important to expanding literacy competencies.

For reading, a well-resourced school library or multi-media center promotes student reading. The variety and richness of the reading material available to students forms the core of students' reading experience in school. Research has shown that students use the library because there are books that

interest them; therefore, ensuring that there are a variety of reading materials that would be of interest to the students at each grade is essential to promoting reading achievement (Clark, 2010). Libraries also are becoming multi-media centers, providing ebooks, access to digital periodicals, and online resources that allow students to seek information on subjects of interest. While school libraries are common in most countries, some countries have moved towards classroom libraries, as is discussed in the Classroom Contexts section of this chapter. Regardless of where the library is located, research has indicated that the availability of books that students can choose from is positively related to reading achievement (Allington et al., 2010).

Teacher Working Conditions and Job Satisfaction

PIRLS 2011 results showed higher achievement for schools that provide good working conditions for teachers. A manageable workload, adequate facilities, and the availability of instructional materials are important ingredients to fostering productive working conditions and promoting teacher satisfaction (Johnson, 2006; Johnson, Kraft, & Papay, 2012).

In addition, a positive school environment can lead to greater job satisfaction and teacher self-efficacy, which in turn can increase student learning (Caprara, Barbaranelli, Steca, & Malone, 2006). Schools can support teachers and increase retention by providing competitive salaries, a reasonable number of teaching hours, adequate workspace, and good equipment. While the physical conditions of the school are important, the social conditions of the school can be essential to retaining teachers and fostering student achievement. Important social factors in a school include a positive school culture, collaboration among teaching staff, and the leadership of the principal (Johnson et al., 2012).

The transition from university to a school teaching position can be difficult. Consequently, in many countries a large percentage of new teachers leave the profession after only a few years of teaching (APPA, 2007; Guarino, Santibañez, & Daley, 2006; Hancock & Scherff, 2010). The extent to which schools take an active role in the acculturation and transition of new teachers may be important for maintaining a stable teaching force. Mentoring programs, modeling of good teacher practice by peers, and induction programs designed by experienced teachers within the school may be important aids to the beginning teacher (Moskowitz & Stephens, 1997; Tillmann, 2005).

Principal Leadership

Research has shown that a principal can affect student achievement. A characteristic of a successful principal is being able to articulate the mission of the school (Witziers, Bosker, & Krüger, 2003). As such, an effective school leader brings coherence to the “complexities of schooling” by aligning the structure and culture of a school with its core purpose (DuFour, Eaker, & DuFour, 2005). This includes guiding the school in setting directions and seeking future opportunities, monitoring that the school’s goals are met, as well as building and sustaining an effective learning environment and a positive school climate. Successful principals often are involved in guiding the teaching process as instructional leaders and ensuring that teachers receive the necessary training and development to produce high achievement among the students (Robinson, Lloyd, & Rowe, 2008). Within the constraints of the educational system, it is the principal’s responsibility to ensure that the instructional time, and in particular the time devoted to reading, is sufficient for the purposes of curriculum implementation. It is also the principal’s responsibility to oversee school-level instructional policies, such as grouping arrangements.

School Emphasis on Academic Success

Overall, the success of a school also can be attributable to a school’s emphasis on academic success, or the school’s expectation of academic excellence. PIRLS 2011 results, as well as a TIMSS and PIRLS 2011 school effectiveness study (Martin, Foy, Mullis, & O’Dwyer, 2013), have shown an association between academic achievement and the school emphasis on academic success, a construct based on the literature on academic optimism (Hoy, Tarter, & Hoy, 2006; McGuigan & Hoy, 2006; Wu, Hoy, & Tarter, 2013). Indicators of school emphasis on academic success include school administrators’ and teachers’ expectations for successful curriculum implementation and student achievement, parental support for student achievement, and the students’ desire to achieve.

Research also has found that teacher collaboration can increase student learning (Goddard, Goddard, & Tschannen-Moran, 2007; Wheelan & Kesselring, 2005). Teachers who discuss their work with colleagues and collaborate in planning and implementing lessons usually feel less isolated and are less likely to leave teaching (Johnson, Berg, & Donaldson, 2005). The collective education of a school’s teachers also can be essential to its academic success. From as early as first grade, research has linked the collective teacher education in a school

to student achievement (Croninger, Rice, Rathbun, & Nishio, 2007), suggesting that collaboration among teachers with strong educational backgrounds can create an emphasis on academic success within the school and facilitate the implementation of the curriculum.

Collective efficacy among the teachers of the school and general trust that faculty members have for parents and students are additional attributes of a well-functioning school (Hoy et al., 2006; McGuigan & Hoy, 2006; Wu et al., 2013). Schools that encourage and welcome parental involvement are more likely to have highly involved parents than schools that do not make an effort to keep parents informed and participating (Jeynes, 2005). High levels of parental involvement can improve student achievement, as well as students' overall attitude toward school (Dearing, Kreider, & Weiss, 2008; Jeynes, 2005; Jeynes, 2007; Taylor, Pearson, Clark, & Walpole, 2000).

In effective schools, the principal and teachers collaborate to ensure that the curriculum is appropriately implemented in the classrooms. In addition to testing and value-added models, research has found that classroom observations and student surveys can provide important information about the effectiveness of teaching practices (Bill & Melinda Gates Foundation, 2013).

Safe, Orderly, and Disciplined School

Respect for individual students and teachers, a safe and orderly environment, and constructive interactions among administrators, teachers, parents, and students all contribute to a positive school climate and lead to higher student achievement (Cohen, McCabe, Michelli, & Pickeral, 2009; Greenberg, Skidmore, & Rhodes, 2004; Konishi, Hymel, Zumbo, & Li, 2010; Martin, Foy, Mullis, & O'Dwyer, 2013). The sense of security that comes from having few behavioral problems and little or no concern about student or teacher safety at school promotes a stable learning environment. A general lack of discipline, especially if students and teachers are afraid for their safety, does not facilitate learning and is associated with lower academic achievement (Milam et al., 2010; Stanco, 2012). Schools where there are clear rules and more fairness have atmospheres of greater discipline and safety (Gottfredson, Gottfredson, Payne, & Gottfredson, 2005).

Bullying among students is a threat to the school learning environment. Bullying is aggressive behavior that is intended to harm students who are physically or psychologically less strong and takes a variety of forms ranging from name calling to inflicting physical harm. Bullying causes distress to victims, leads to low self-esteem, and makes victims feel like they do not

belong (Glew, Fan, Katon, & Rivara, 2008), and research shows that bullied students are less likely to achieve in school (Glew et al., 2008; Konishi et al., 2010; Rothon, Head, Klineberg, & Stansfeld, 2011). With the prevalence of the Internet, cyberbullying is a new form of bullying that unfortunately appears to be common among students; and, like other bullying, cyberbullying leads to low self-esteem, distress, and poor achievement (Mishna, Cook, Gadalla, Daciuk, & Solomon, 2010; Tokunaga, 2010). Unlike bullying, the process of cyberbullying can be shrouded in a cloud of anonymity for the Internet bully.

Classroom Contexts

Because most of the teaching and learning in school takes place in the classroom, successful learning is influenced by the classroom environment and instructional activities. PIRLS 2016 focuses on the following proven practices that improve teaching and learning:

- Teacher preparation and experience;
- Classroom resources;
- Instructional time;
- Instructional engagement;
- Instruction for online reading; and
- Classroom assessment.

This section benefitted especially from John Hattie's (2009) book, *Visible Learning: A Synthesis of Over 800 Meta-analyses Relating to Achievement*.

Teacher Preparation and Experience

The preparation and competence of teachers is critical (Darling-Hammond, 2000; Hill, Rowan, & Ball, 2005), and prospective teachers need coursework in order to gain knowledge in the subjects that they will teach, to understand about how students learn, and to learn about effective pedagogy in teaching reading.

In addition to teacher education and training, teacher experience is essential, and the first years of teaching experience are especially important for teacher development (Harris & Sass, 2011; Leigh, 2010). However, research also has found that teachers continue to develop after five years of experience, and that this development can positively affect student achievement (Harris et al., 2011).

Professional development through seminars, workshops, conferences, and professional journals can help teachers increase their effectiveness and broaden their knowledge (Blank & de las Alas, 2009; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007). Professional development is especially important in order to train teachers in how to incorporate online reading into their classroom practices (Coiro, 2012).

With education, training, and experience, teachers should feel prepared and confident to teach reading literacy. Research has shown that teachers' confidence in their teaching skills not only is associated with their professional behavior, but also with students' performance and motivation (Bandura, 1997; Henson, 2002).

Classroom Resources

Another aspect of the classroom that is relevant for reading literacy includes the extent of the variety and richness of the reading material available to students. The reading material and technology that teachers use in reading instruction form the core of students' reading experience in school.

Students who have easy access to reading materials are more likely to read. For this reason, many countries have moved to creating classroom libraries that provide a wide variety of text and text types, including digital resources, as well as a special place for independent reading. It is believed that the presence of a classroom library can aid teachers in incorporating literature into instruction and foster positive reading habits and attitudes (Morrow, 2003; Routman, 2003; Young & Moss, 2006).

In the digital age, a growing aspect of reading instruction is how to incorporate new media into reading instruction; therefore, the use of technology in the classroom, and teachers' familiarity and comfort with technology, is increasingly important. Teachers' decisions to use technology in the classroom can result from their beliefs, attitudes, and comfort levels, as well as access to training and materials (Mueller, Wood, Willoughby, Ross, & Specht, 2008; Russell, Bebell, O'Dwyer, & O'Connor, 2003). Access to technology also is an important factor (Hsu, Wang, & Runco, 2013).

Instructional Time

At the school level, the relative emphasis and amount of time specified for reading instruction can greatly affect the opportunities to learn. Results from PIRLS show that there is variation between countries in the intended

instructional time prescribed by the curriculum and the actual time of implementation in the classroom. On average, however, there is very close agreement between the curriculum guidelines and teachers' reports about implementation. Research has shown that it is especially important that instructional time be used effectively toward the learning goals, and not be spent on secondary activities unrelated to the instructional content.

Homework is one way teachers can extend instruction and evaluate student learning. The types of homework assigned in reading classes regularly include independent reading, comprehension questions about what students have read, or some combination of the two. The amount of homework assigned for reading varies both within and across countries. In some countries, homework typically is assigned to students who need it the most. In other countries, students receive homework as an enrichment exercise. Strong students may spend less time on homework because they use their time more efficiently (Trautwein, 2007; Won & Han, 2010). For these reasons, it has been argued that the effect of homework may be better encapsulated by measures of homework frequency than homework time (Trautwein, 2007). In addition, there is evidence that homework is more effective for older students and higher achieving students (Hattie, 2009).

Instructional Engagement

TIMSS and PIRLS 2011 school effectiveness research has confirmed the importance of student engagement with instruction as an important factor in predicting reading achievement (Martin, Foy, Mullis, & O'Dwyer, 2013). According to McLaughlin et al. (2005), student engagement focuses the student's "in-the-moment" cognitive interaction with the content. "Learning occurs through the cognitive engagement of the learner with the appropriate subject matter knowledge" (McLaughlin et al., 2005, p.5). Engagement can take place when a student listens to the teacher, discusses texts with peers, or reads independently. Engagement has been conceptualized as the idea that a student's "in-the-moment" mindset is torn between engagement with instruction and distractions that are unrelated to the topics in the class (Yair, 2000). The challenge for the teacher is to use effective methods of instruction in order to maintain student engagement in the content, activating the students cognitively (Klieme, Pauli, & Reusser, 2009; Lipowsky et al., 2009). A well-managed classroom and a supportive classroom environment can facilitate this engagement process (Klieme et al., 2009; Lipowsky et al., 2009).

Effective classroom management allows for better engagement with teaching and learning, as well as higher achievement outcomes, because it focuses the class and instructional time on the topic (Fauth, Decristan, Rieser, Kleime, & Büttner, 2014; Lipowsky et al., 2009; Marzano, Marzano, & Pickering, 2003; Wang, Haertel, & Walberg, 1993). Effective teachers are strong classroom managers, who build trust with the students and limit disruptions to the instruction (Stronge, Ward, & Grant, 2011). Teachers can be strong classroom managers by ensuring that rules are clear, taking effective disciplinary action, building optimal student-teacher relationships, and maintaining an alert and objective mindset during instruction (Marzano et al., 2003).

Fostering student motivation in reading is fundamental for reading teachers, because students who are motivated to read more, especially at a young age, become better readers (Lewis & Samuels, 2003). Motivation can be facilitated, according to self-determination theory (Deci & Ryan, 1985), by creating a supportive environment that fosters a sense of *relatedness*, *competence*, and *autonomy*. A classroom environment that is overly controlling can stifle student motivation because it removes the student's sense of autonomy (Niemiec & Ryan, 2009). Effective teachers are able to create an optimal classroom environment by providing clear purpose and "strong guidance" for the classroom while encouraging cooperation among the students and an environment of respect between students as well as between students and the teacher (Marzano et al., 2003). Supportive teacher-student relationships are important not only in order to foster student motivation (Cornelius-White, 2007; Marzano et al., 2003), but also to increase student participation and student achievement (Cornelius-White, 2007; Fauth et al., 2014). A socially welcoming school environment or classroom also can provide a sense of relatedness by giving students a sense of belonging (Goodenow & Grady, 1993).

Additionally, teachers can nurture student motivation in reading by creating an environment that allows students to work autonomously, while providing support and guidance (Ryan & Deci, 2000; Reeve, Jang, Carrell, Jeon, & Barch, 2004). Autonomy can be fostered in reading instruction by allowing students the opportunity to choose their reading material (Guthrie, McRae, & Klauda, 2007).

An effective teacher ensures that students are actively involved in their own learning process. Students are more engaged in student-centered learning when they are working individually or with their peers rather than listening to a teacher lecture or watching a video (Shernoff, Csikszentmihalyi, Schneider, &

Shernoff, 2003; Yair, 2000). Peer-tutoring, small group work, and peer mentoring are effective strategies that promote student engagement and are linked to achievement (Hattie, 2009; Springer, Stanne, & Donovan, 1999).

Students also are more engaged when they are challenged and face greater cognitive demands (Shernoff et al., 2003; Yair, 2000). However, the challenges of the tasks should be perceived to be attainable for the students. In this respect, effective teaching is setting challenging yet attainable goals for each student and supporting the students in reaching the goals (Hattie, 2009; Klein, Wesson, Hollenbeck, & Alge, 1999). In setting goals, it is important that students understand the process of achievement, what outcome is expected, and why the goal is important for the learning process (Hattie, 2009; Martin, 2006). One way that students can be supported in reaching their goals is by linking the new material and concepts to the students' prior knowledge and understanding (Klieme et al., 2009; McLaughlin et al., 2005). Concept mapping (Nesbit & Adesope, 2006) and advance organizers (Hattie, 2009; Stone, 1983) are two proven strategies for linking prior learned concepts to new concepts.

Discussion-based instructional approaches have been shown to be effective in engaging and supporting students in their reading development (Applebee, Langer, Nystrand, & Gamoran, 2003; Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). The specific discussion-based strategy implemented by the teacher (e.g. collaborative reading, questioning the author) can have a distinct effect on the development of a child's reading comprehension and critical thinking skills, and therefore the approach should be aligned with the goals of the lesson (Murphy et al., 2009).

Effective teachers also find means to emphasize the relevance of the learning task (Yair, 2000). By providing stimulating reading tasks around student interest and students' hands-on experiences, teachers can fuel student interest in reading, increasing motivation and reading comprehension (Guthrie et al., 2006).

Overall, research has shown that there are many strategies to teach reading and enhance comprehension. It is the educator's responsibility to understand the needs of the students and to incorporate the instructional techniques that can best foster student motivation to read and student achievement. Effective reading instruction provides a balanced program, integrating many components, including multiple texts, teacher- and student-led discussions, collaborative learning, time for independent reading, and a variety of assessment techniques (Gambrell, Malloy, & Mazzoni, 2011). Other proven instructional strategies

include repeated reading (Therrien, 2004), phonemic awareness instruction (Ehri et al., 2001), and vocabulary instruction (Elleman, Lindo, Morphy, & Compton, 2009).

Instruction for Online Reading

An emerging aspect of reading instruction is the teaching of online reading. Unlike traditional reading, students reading online must learn to negotiate their way through Internet features such as hypertexts, multi-modal texts, and interactive texts, in order to find the information they are seeking (Coiro, 2003). Informational searches begin with a question, and with this question in mind the student uses a search engine in order to locate the information, as well as to identify and evaluate the credibility of the search results and the sites visited (Leu et al., 2007). In addition, online readers often need to synthesize the information from multiple websites in order to answer the question (Leu et al., 2007). While traditional print-based offline reading informs online reading comprehension, the skills needed for successful online reading go beyond those needed for print reading (Coiro, 2011; Leu et al., 2007). From an instructor's point of view, for students to become strong online readers, they not only must know how to read, but they also must be able to locate, evaluate, and synthesize information in the online environment (Coiro, 2011; Leu et al., 2007), a process that assumes basic computer skills and the ability to use technology as a tool to find information (Tondeur, van Braak, & Valcke, 2007). Therefore, it is increasingly important for teachers to tailor lessons to this new form of reading (Leu et al., 2007).

In some circumstances, poor offline readers may be more skilled or engaged in the interactive nature of seeking information through online media, and therefore can compensate for weaknesses in reading with their online skills (Castek, Zawilinski, McVerry, O'Byrne, & Leu, 2010; Leu et al., 2007). For example, students using digital technology are more likely to use resources that aid comprehension, such as dictionaries (Wright, Fugett, & Caputa, 2013). It also has been shown that students with less prior knowledge in a topic are able to perform well on Internet-related tasks, because their Internet skills can help overcome knowledge deficits (Coiro, 2011).

Classroom Assessment

Teachers have a number of ways to monitor student progress and achievement. PIRLS results show that teachers devote a fair amount of time to student assessment, whether as a means of gauging what students have learned or for providing feedback to students, teachers, and parents. The frequency and

format of assessment are important indicators of teaching and school pedagogy, and research has shown that frequent testing can lead to improving student achievement (Başol & Johanson, 2009). Informal assessments during instruction help teachers identify needs of particular individuals, evaluate the pace of the presentation, and adapt the instruction. Formal tests, both teacher-made and standardized assessments, typically are used to make important decisions about students (e.g., grades) or schools for accountability purposes. Teachers use a variety of formats and test a wide range of contents and cognitive skills. The types of questions included in tests and quizzes can send strong signals to students about what is important.

Student Characteristics and Attitudes Toward Learning

An important topic in educational research is the relationship between student attitudes toward a subject and students' academic achievement. In educational research, there are numerous theories regarding how student motivation and confidence can lead to engagement and academic achievement. PIRLS 2016 includes information about the following:

- Student readiness to learn;
- Student motivation;
- Student self-concept; and
- Student reading literacy behaviors.

Student Readiness to Learn

In order for students to engage in a task or a goal, it is crucial that they are physiologically ready and possess the prerequisite knowledge to engage in the content (McLaughlin et al., 2005). Results from PIRLS 2011 indicated that many students, even in the most developed countries, struggle to pay attention in class due to hunger and sleep deprivation.

Research has identified nutritional problems to be a barrier to student learning, with school breakfast programs suggested as a possible solution (Taras, 2005). Likewise, sleep deprivation has been found to be related to lower achievement (Dewald, Meijer, Oort, Kerkhof, & Bögels, 2010), and may be associated with the early start times at certain schools (Perkinson-Gloor, Lemola, & Grob, 2013), as well as the socioeconomic status of the student (Buckhalt, 2011).

In addition to physiological readiness, students also need to have the prerequisite knowledge to engage with the content because “every new thing that a person learns must be attached to what the person already knows” (McLaughlin et al., 2005, p. 5). In other words, for students to learn, they need to be able to connect the new content to prior knowledge.

Student Motivation

In addition to students’ readiness to learn, their motivation is essential to success in reading (Anmarkrud & Bråten, 2009; Logan, Medford, & Hughes, 2011). The source of academic motivation and how it can be facilitated within the school, classroom, and home has been a recurrent area of research (Bandura, 1997; Csikszentmihalyi, 1990; Deci & Ryan, 1985). Students have different levels of motivation for each distinct task and subject area.

Most of the literature separates motivation into two distinct constructs: intrinsic motivation and extrinsic motivation. Intrinsic motivation is an “energizer of behavior” (Deci & Ryan, 1985, p.32). Students who are intrinsically motivated to read find it to be interesting and enjoyable (Deci & Ryan, 1985) and have a positive attitude towards reading. Although it is theorized that all human beings are born with intrinsic motivation to learn, contexts such as the home and school can either facilitate or suppress this inner motivation.

Extrinsic motivation refers to the drive that comes from external rewards like praise, career success, money, and other incentives. Research consistently shows that intrinsic motivation is more closely related to reading achievement than extrinsic motivation (Becker, McElvany, & Kortenbruck, 2010; Schiefele, Schaffner, Möller, & Wigfield, 2012; Vansteenkiste, Timmermans, Lens, Soenens, & Van den Broeck, 2008). Indeed, some research points to external rewards dampening a student’s intrinsic motivation (Deci, Koestner, & Ryan, 1999). Nevertheless, most students do not have an intrinsic motivation to learn all subjects, and therefore fostering motivation through extrinsic rewards may be a necessary course of action for a teacher or a parent. In these cases, research has found that successful students internalize their extrinsic motivation to increase performance, in an environment that cultivates feelings of relatedness, competence, and autonomy (Ryan & Deci, 2000; Deci & Moller, 2005).

Student Self-concept

Students’ perceived competence in a subject is linked to their subject-specific self-concept. If students believe that reading tasks are outside the scope of what can be completed successfully, students will view the exercise as futile, and this

will affect their motivation. In contrast, if students are confident, they are more likely to persevere in order to successfully complete the school task (Bandura, 1997). Self-concept often is estimated relative to students' peers or experiences, and is a multi-dimensional construct (Marsh & Craven, 2006); that is, students reading self-concept is distinct from their mathematics or science self-concept.

Student Reading Literacy Behaviors

Students who are motivated to read and have a strong reading self-concept tend to read more than their peers and have better reading comprehension (De Naeghel, Van Keer, Vansteenkiste, & Rosseel, 2012). The process can be cyclical, because students who are good readers, with strong reading skills, tend to read recreationally (Leppänen, Aunola, & Nurmi, 2005; Mol & Bus, 2011), which contributes to consolidating their reading ability by improving vocabularies, spelling abilities, and so forth (Mol & Bus, 2011).

Recreational reading habits often are supported by the family and friends of young readers; thus, a supportive home environment can be influential in fostering children's reading habits. However, home support is not only important for children prior to their entry into primary school; home support also can be influential in promoting reading throughout children's schooling (Baker, 2003; Klauda & Wigfield, 2012).