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Secondary students' self-regulated engagement in reading: researching self-regulation as situated in context

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Abstract

In this research, we drew on a model of self-regulated learning (SRL) (Butler & Cartier, 2005; Cartier & Butler, 2004) to investigate student engagement in learning through reading (LTR) as situated in context. Our overarching goals were to enhance theoretical understanding about SRL as situated, identify patterns in self-regulated *learning through reading* (LTR) for secondary students within and across classrooms, and continue developing productive methodological strategies for investigating SRL and LTR. To those ends, we employed a mixed-methods design to find patterns within and across 31 classrooms at multiple levels of aggregation. Participants were 646 secondary students engaged in curriculum-based LTR activities. Findings were derived from two coupled assessments: A self-report questionnaire and a performance-based measure of LTR. We used frequency, factor analytic, and cluster analyses to create descriptive profiles of SRL (across emotion, motivation, cognition, and metacognition). Main findings were: (1) important mismatches between students' self-reported LTR engagement and the demands of LTR activities; (2) four coherent profiles of LTR engagement (actively engaged; disengaged; high stress/actively inefficient; passive/inactively efficient), (3) moderate links between students' self-reported LTR profiles and LTR performance; and (4) differences in SRL profiles that reflected individual-context interactions. We close by distilling implications for understanding, researching, and fostering SRL as situated within naturalistic settings.

Key words: Self-regulation; learning through reading; cognitive strategies; metacognition; assessment; motivation

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Research suggests that students who intentionally and reflectively self-regulate learning are more likely to be successful (Zimmerman & Schunk, 2001). Thus, our research is centrally concerned with expanding understanding about the nature of self-regulated learning (SRL) and contexts and practices that support it. Advancing understanding about SRL requires investigating how students marshal their energies and resources to meet the demands of different kinds of academic work in particular settings (Butler & Cartier, 2004-b; Butler & Winne, 1995; Cartier & Viau, 2001; Viau, Cartier, & Debeurme, 1997; Weinstein, 1994; Zimmerman, 2000). Thus, in the research described here, we also took seriously the challenge to find ways to study SRL as situated in particular classrooms (Butler & Cartier, 2005; Cartier, 2002; Winne & Perry, 2000).

To that end, we drew on a situated model of self-regulated learning (Butler & Cartier, 2004-a; Cartier & Butler, 2004) to investigate students' self-regulated engagement in curriculum-based *learning through reading* (LTR) activities as contextualized within diverse classrooms. We aimed to advance understanding by employing a layered design framework to consider how self-regulated LTR is shaped by interactions between what individuals bring to learning (e.g., background knowledge; prior experiences with academic work; motivational beliefs) and qualities of the contexts in which they are working (i.e., LTR demands in Science). Our overarching goals were to enhance theoretical understanding about how SRL is situated in context, identify patterns in LTR for secondary students within and across classrooms, and continue developing productive methodological strategies for investigating SRL and LTR (Butler & Cartier, 2004-a, 2005; Schnellert, Butler & Higginson, 2008).

A focus on learning through reading

Learning through reading is an ubiquitous requirement in secondary contexts (Barton, 1997; Cartier & Viau, 2001; Ciborowski, 1995; Ellis & Lenz, 1990; Lindberg, 2003; Vacca, 1998). Students are routinely required to navigate multiple forms of text (i.e., textbooks, articles, original source materials, websites) to learn about various domains (e.g., in Mathematics, Science, Social Studies, History). To be maximally successful when LTR, students must not only anticipate expectations of particular teachers, but they must also recognize, select, adapt, and apply approaches to LTR appropriate to the demands of different subject areas and types of texts (Billmeyer & Barton, 1998; Wilhelm, 2007).

LTR activities require self-regulation because they challenge students to coordinate multiple types of information (e.g., about a topic; LTR tasks; what learning entails in a given subject area; themselves as learners) and to plan and manage use of multiple strategies (Burke, 2001; Cartier, 2000; Rycik & Irwin, 2005; Stetson & Williams, 1992; Vacca et al., 2005). For example, in order to learn from texts, students need to draw not only on domain specific knowledge within a curricular area and in relation to a specific topic, but also on metacognitive knowledge about reading and learning tasks and themselves as learners (Brown, Bransford & Cocking, 2000; Flavell, 1979). Students must employ both reading and learning strategies in order to build meaning and analyze, syn-

thesize, transform and apply information (Almasi, 2003; Duke & Pearson, 2002; Dole et al., 1991). As Vacca et al. (2005) describe it, students "need to know how to think with text in order to respond to, discover, organize, retrieve, and elaborate on information and ideas they encounter in content learning situations" (p. 14). To coordinate knowledge and self-direct learning, students must employ metacognitive (i.e., self-regulating) strategies to interpret expectations and plan and orchestrate their learning.

At the secondary level, instructors routinely expect that students know how to construct new knowledge through reading in a variety of domains (Alvermann, 2001; Barton & Jordan, 2001; Cartier & Théorêt, 2001; Kamil, 2003; Lewis, 2007; Moje, 2007). Unfortunately, counter to these expectations, secondary students often struggle with understanding and meeting the demands of LTR tasks in different subject areas (Cartier, 2006; Stetson & Williams, 1992). For example, research has revealed problematic use of cognitive and self-regulating strategies when LTR by at-risk secondary students from underprivileged areas (Cartier, 2003; Cartier & Théorêt, 2001; Cartier, Butler, & Janosz, 2007; Chan, 1994; Kozminsky & Kozminsky, 2001). Research has also revealed negative trends in students' perceptions about their engagement in LTR across the secondary years (Chan, 1994) and between elementary and secondary school (Chouinard, Bowen, Cartier, Desbiens, Laurier, Plante & Butler, 2005). Thus, a more specific goal in this research was to document important gaps in students' perceptions about and engagement in LTR in relation to contextual expectations so as to provide direction for assessment and instruction (Cartier, Bouchard, & Butler, 2008; Schnellert et al., 2008).

A situated approach to investigating self-regulated learning

In this research we built from a situated model of SRL (Butler & Cartier, 2004-a; Cartier & Butler, 2004) to identify key components comprising students' LTR engagement (see Figure 1). This model draws from prior research focused on SRL processes (e.g., Corno, 1993, 1994; Paris, Byrnes, & Paris, 2001; Pintrich, 2000; Wang, Haertel, & Walberg, 1993; Winne & Hadwin, 1998; Zimmerman, 2000) and similarly focuses attention on the interplay between motivation, emotion, cognition, and metacognition in strategic learning. But this particular model also foregrounds how engagement in LTR reflects an interaction between what individuals bring to an activity and multiple, nested layers of context, from the broader sociocultural and historical contexts within which a school is situated (which define what constitute important curricula and what learning in school entails), to local community resources, priorities and values, to the immediate learning environment constituted within a school, a school program (e.g., French immersion) and classroom (e.g., subject area, activities/tasks assigned, instructional and evaluation/feedback practices). In this research, we focused attention on how SRL was situated within layers of context (Butler & Cartier, 2005).

As is depicted in Figure 1 (at the left margin, where individuals enter a particular setting), individuals bring to academic learning environments a wealth of prior experiences, strengths, challenges and interests that interact with features of context to shape their approaches to learning. Examples include a history of challenges with reading or experi-

ences with LTR demands as defined in particular educational settings. For instance, a student who has consistently received high marks on homework assignments in Science classes for copying definitions out of a text is likely to draw on that prior experience when interpreting LTR demands in a new Science classroom.

Building from prior experiences, students bring to bear knowledge, beliefs, perceptions and emotional reactions that mediate engagement in learning. These include knowledge about a subject area and processes for completing tasks in a given domain (Alexander & Judy, 1988; Cartier, 2000; Jetton & Alexander, 2004; Moje, 2000; Pressley & Afflerbach, 1995), perceptions about particular kinds of academic work (Brown, Campione, Ferrara, Reeve, & Palincsar, 1991; Butler & Cartier, 2004-b; Cartier, 2000), motivationally-linked perceptions and beliefs such as self-perceptions of competence and control (i.e., self-efficacy), perceptions of task value and attributions for success or failure (Bandura, 1993; Borkowski, 1992; Cartier, Chouinard & Butler, 2006; Greenleaf, Brown & Litman, 2004; Pintrich & Schrauben, 1992; Schiefele, 1991; Schunk, 1991, 1994; Viau, 1994, 1999) and emotional reactions such as stress or worry. For example, students who have consistently struggled with reading may feel stressed when faced with reading and hold low self-efficacy perceptions that influence how willing they are to participate and persist in an LTR activity (Bandura, 1993; Cartier & Viau, 2001). Thus, in this research, we investigate how beliefs, perceptions and emotions that students bring to and generate during situated LTR activities might be associated with LTR engagement.

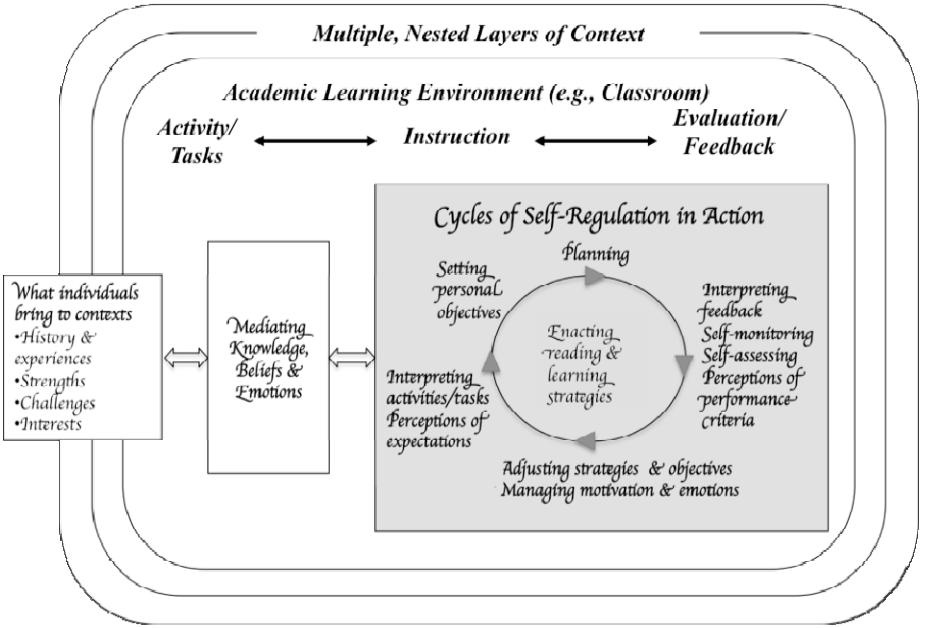


Figure 1:
A situated model of self-regulated learning (Butler & Cartier, 2004-a; Cartier & Butler, 2004)

When faced with an LTR activity (and component tasks, such as reading and summarizing information), students ideally engage positively in a cycle of self-regulating activities. For clarity, below and in Figure 1 we describe these activities as if they unfold in a series of neat and tidy stages (i.e., interpreting tasks/activities, setting personal objectives, planning, interpreting feedback/self-monitoring/self-assessing, adjusting approaches/managing motivation/emotions). While this modeling is helpful in defining what constitutes SRL, it is important to recognize that in real time these processes unfold in recursive, dynamic, multidirectional and complex ways (e.g., see Winne & Hadwin's 1998 depiction that foregrounds the recursivity of processes).

Pivotal in students' successful LTR engagement is their interpretation of activity and task requirements, because students' perceptions of expectations shape all further decisions (consciously or not) about relevant learning outcomes and processes (Butler, 1995, 1998; Butler & Cartier, 2004-a, 2004-b; Butler & Winne, 1995; Cartier & Butler, 2004; Winne & Hadwin, 1998). For example, if students perceive that LTR in a Science activity requires finding and memorizing definitions, then they are likely to choose strategies well suited to searching and memorizing rather than to understanding and working with concepts. Unfortunately, however, research suggests that students stumble at this pivotal step when LTR (e.g., Butler, 1999; Cartier, 2006; Stetson & Williams, 1992), for example, when they do not recognize the importance of taking time to interpret task demands (Butler, 1995, 1998; Butler & Cartier, 2004-b), or when they hold perceptions about LTR not well matched to task requirements (e.g., Butler & Cartier, 2004-b; Brown et al., 1991; Cartier, 2003; Winne & Marx, 1982). Thus, in this research we focus attention on students' perceptions about expectations when LTR in relation to contextual demands. We utilize a self-report tool, not to measure SRL behaviour, but rather to provide a window into students' perceptions about LTR expectations.

Even when students productively interpret task requirements, they may not choose to engage in learning (see Figure 1). Students set personal objectives, based in part on their perception of task demands in a particular setting, but also mediated by both motivational beliefs (e.g., perceptions of self-efficacy or task value) and emotions (e.g., worry). These goals might be academically- or socially-oriented and might fuel engagement, or non-engagement, in learning (Borkowski & Muthukrishna, 1992; Butler & Cartier, 2004-a; Corno, 1993, 1994; Linnenbrink & Pintrich, 2001; Meichenbaum & Biemiller, 1992; Pintrich 2000). Thus, in this research, we created multidimensional profiles of SRL engagement that included the personal objectives set by students that might either support or undermine LTR (e.g., objectives focused on understanding or on reading as little as possible, respectively).

At the heart of this SRL model is a set of self-regulating, activity-orchestrating strategies such as planning (e.g., time, resources, reading or learning strategies), interpreting feedback and self-monitoring, adjusting strategies or objectives as needed, managing motivation and emotions, and self-assessing strategies and outcomes (Butler, 1998; Butler & Winne, 1995; Cartier, 2000; Corno, 1993; 1994; McKeachie, 1988; Meichenbaum & Biemiller, 1992; Pressley & Afflerbach, 1995; Zimmerman, 2000). Ideally, students build from active and adaptive interpretations of LTR demands in a given context to set positive personal objectives, identify productive criteria for judging performance, plan

and enact effective reading and learning strategies, and monitor and adjust strategies responsively.

Indeed, key to successful engagement in LTR is that students select, adapt, or even invent reading and learning strategies well matched to task demands within a particular setting (Cartier, 2000; Case, Mamlin, Harris & Graham, 1996; Duke & Pearson, 2002; Vauras, 1991; Weinstein & Mayer, 1986). Unfortunately, research suggests that students are not always successful at identifying productive strategies or even enacting ones that they know (Bos & Anders, 1992; Butler, 1995, 1998; Cartier, 2003, 2006; Cartier & Butler, 2004; Laparra, 1991). Thus, in this research we aimed to advance understanding by studying the perceptions students have, not only about expected outcomes associated with LTR, but also about reading, learning and self-regulating strategies they recognize themselves as using when engaged in LTR.

Research questions

In sum, two main goals in this study were to advance understanding about SRL as situated, and to investigate patterns in secondary students' self-regulated LTR engagement. To achieve those goals, we drew on a situated model of SRL that defines a range of interacting constructs to be considered when describing how individuals working within multiple layers of context engage in LTR. We built from this model to create descriptive profiles of secondary students' situated LTR engagement and LTR performance to address the following, more specific research questions: (1) to what extent were students' perceptions of LTR consonant with activity/task demands, as defined by teachers in this context?; (2) did students' self-reports allow construction of coherent LTR profiles (i.e., across emotions, motivation, cognition, and metacognition)?; (3) how did secondary students' self-reported SRL profiles relate to LTR performance?; and (4) how were students' perceptions about their LTR profiles reflective of individual-context interactions?

Method

This research report summarizes data drawn from a larger project focused simultaneously on teacher professional development and student learning (see Butler, Schnellert, & Cartier, 2008a, 2008b; Schnellert et al., 2008). In the overall project, teachers at four secondary schools located within an urban, multicultural school district within the province of British Columbia (BC), Canada had been working collaboratively with researchers over time to better understand and promote students' self-regulated approaches to LTR. In this report, we focus attention on data collected for 646 students working in 31 classrooms at the start of one year of this larger, multi-layered project.

In this research, we employed a methodological framework that allowed for considering SRL within context and for aggregating data in ways that preserved the situated meaning of data (Butler & Cartier, 2005). When constructing our design framework, we sought a methodological stance that was true to our view of SRL as situated, but at the same time

enabled checking for meaningful patterns: (1) at multiple, nested levels (e.g., for an individual, classroom, subject area, grade level, program, school, district); (2) for groupings of individuals with related backgrounds, learning challenges, or experiences (e.g., gender, receiving learning assistance, limited English language proficiency); and (3) for individuals in these broad groupings working in different contexts (e.g., females studying in Science or Humanities).

To achieve these objectives, we borrowed theoretical concepts from multiple-case study designs (Merriam, 1998; Yin, 2003). More specifically, we would describe our design in this research as encompassing multiple, context-dependent case studies at the classroom level, each of which preserved meaning in context. Consistent with case study methodology, we collected and juxtaposed multiple forms of data to relate students' engagement in LTR to the contexts in which they were working. Data on student learning were gathered using two coupled assessments at the start and end of the year. We focus on the fall data here. To inform interpretation of those assessment data, detailed descriptions of school, program, and classroom contexts were gathered using interviews, artifact collection, and observation (for details see Butler et al., 2008a, 2008b).

To address our research questions, we conducted cross-case analyses by moving "upwards" (e.g., from classroom to grade level to school) and "downwards" (e.g., from school to grade level to classroom to individual) across levels of aggregation to consider how patterns situated at the classroom-level related to patterns at other levels (i.e., whether a grade-level pattern was common across classes or masked between-class differences). This approach allowed us to retain a multidimensional, situated view of SRL while still investigating cross-case patterns. We did also construct aggregated LTR profiles across classrooms for individuals with shared experiences (e.g., a history of struggling with academic work). But, retaining our situated perspective that foregrounds individual-context interactions, we also explored how students' background interacted with context to shape engagement in learning.

Participants

Table 1 presents an overview of participants and important differences between the 31 classroom contexts in which students were working. Participating students came from four schools, three that enrolled students in grades 8 to 12 (schools 1, 2, and 4), and one that enrolled students in grades 7 to 9 (school 3). In schools 1 and 2, students could pursue their education in either an English language stream or in French Immersion. In school 3, families and students could choose between a Fine Arts and Science Academy. In these schools we could compare LTR profiles of students working in the same curricular domain (e.g., LTR in Science) but within different programs (e.g., the Fine Arts or Science Academies). Finally, within each school, classroom teachers volunteered to participate based on a combination of personal interest and membership in their school's literacy-focused team. In the end, classrooms addressed a variety of curricular areas from grades 7 to 12.

Table 1:
An Overview of Participants and Contexts in Which Data Were Collected

School	Grade	Domain	Program[a]	# of classes	*N*[b]	LA[c]	ESL[d]	M	F
1	8	Science	English	2	23	6	10	9	14
	8	Science	French	3	65	20	0	29	36
2	8	Humanities	English	2	47	2	6	25	22
	8	Humanities	French	3	65	1	0	21	44
	9/10	Drafting		1	24	1	3	18	6
	11	Social Studies		2	26	1	3	12	14
	11	Textiles		1	11	0	0	11	0
3	7	Science	FA	1	22	6	1	4	18
	7	Science	SA	1	16	0	4	8	8
	8	Humanities	FA	2	42	11	2	16	26
	8	Humanities	SA	1	26	2	12	16	10
	9	Humanities	FA	1	24	6	3	4	20
	9	Humanities	SA	1	23	4	3	16	7
4	8	Humanities		4	86	12	14	52	34
	10	English		3	79	12	20	44	35
	10	ESL English 4		1	22	0	22	14	8
	12	Communications		1	27	12	1	16	11
	11/12	Foods & Nutrition		1	18	2	4	4	14
TOTAL				31	646	98	108	319	327

[a]English = Regular English Program; French = French Immersion Program; FA = Fine Arts Academy; SA = Science Academy.
[b]The total pretest N was 655, but isolated demographic data were missing for 9 cases.
[c]LA = Students receiving learning assistance
[d]ESL = Students designated ESL and receiving support to achieve English language proficiency.

Table 1 also lists three individual difference variables we used in aggregated groupings, as rough indicators of individuals' shared background or common experiences. One was gender. A second was whether students were receiving learning assistance, which in the participating district was provided to students who had a history of struggling significantly with academic work (whether or not they were formally identified as having a specific learning disability). The third was whether students had limited English language proficiency and had been designated as English-as-a-second-language (ESL) learners. The cultural backgrounds of these ESL students were diverse (e.g., 30 unique languages were identified either as first languages or the language spoken at home). That said, the challenges shared by these students were to understand and adapt to LTR expectations in this context (Canada, BC, these schools, programs, classrooms) and to learn from texts written in a second language that often assumed Western cultural understandings.

Assessment tools

Two coupled assessment tools were used to construct profiles of students' LTR engagement: The Learning through Reading Questionnaire (LTRQ) and a Performance-Based Assessment (PBA). Both tools were completed as students referenced the same curriculum-based, grade-level LTR activity. Before responding to the LTRQ, teachers showed students the texts they would be reading during the PBA, and told them that they would soon be asked to read those texts to learn more about a specified subject. Students were then asked to think about that example activity when answering all questions on the LTRQ. After filling in the LTRQ, students actually engaged in that LTR activity as part of the PBA.

The Learning Through Reading Questionnaire (LTRQ). The main body of the LTRQ included 22 questions designed to assess students' perceptions about LTR activities and their engagement within them. Each of the constructs associated with LTR, as identified in Figure 1, was addressed across one or more of these questions. For example, we identified students' perceptions about LTR expectations in responses to questions on task interpretation and performance criteria. Reports of emotions experienced while LTR were elicited through three questions, focused on emotions students reported experiencing at the start, during, and at the end of an LTR activity, respectively. Other questions focused attention on prior knowledge, mediating motivational beliefs, and personal objectives, and on reading, learning and self-regulating strategies they recognized themselves as using when engaged in LTR.

For each question, students responded to a series of items. For example, when asked what they were "being asked to do" when presented with an example LTR activity (i.e., task interpretation), students responded separately to choices such as "read the texts," "find important details or facts," "see how information about the subject goes together," or "memorize information." For most items, students rated on a scale from one to four the *frequency* with which an item reflected their experience when LTR. For example, students rated whether, in an LTR activity like the one they were shown, they were being asked to find important details or facts, "almost never," "sometimes," "often," or "almost always." For a few questions, response options varied. For example, students judged their prior knowledge about an LTR topic on a four-point scale ranging from "very little" to "a lot."

Much evidence has been gathered to validate the LTRQ in both English and French language versions (see Butler & Cartier, 2004-a; Cartier & Butler, 2004). Data that speak to the validity of the LTRQ in this context are reported in this paper. More detailed information about validation processes is available elsewhere (Butler & Cartier, 2004-a, 2005; Cartier & Butler, 2004), as are other reports of validating data (e.g., Butler et al., 2008-a, -b).

The Performance-Based Assessment (PBA). The PBA is a curriculum-based measure of LTR performance. In this research PBAs were collaboratively developed, administered, and scored by teachers and researchers (see Brownlie, Feniak & Schnellert, 2006; Schnellert et al., 2008). To begin, participating teachers worked with researchers to select

curriculum-based topics and texts deemed typical given the domain of study and students' grade level. Then, using sample open-ended question stems (Brownlie, et al., 2006), school-based teams crafted prompts that would reveal the quality of students' comprehension and learning (e.g., identifying main ideas and details; linking information to prior knowledge; relating and evaluating information).

To complete the PBA, students were required to read one or more texts in order to learn about a particular topic. Then, they answered questions independently in writing. Students were also asked questions in an oral conference and brief observation designed to assess strategies used and knowledge gained and to allow students with written language challenges to express understandings orally. During conferences, teachers made notes using a common template.

Because the PBA was situated and our classroom cases cut across different grade levels and subject areas (see Table 1), the language of instruction (French; English), domain and topic of study, texts, and question prompts varied across cases. That said, within each school, a common PBA was used for classrooms at the same grade level in the same program/language in the same curricular area. Further, what was common across all PBAs was that question prompts were constructed to correspond with the cross-grade and cross-subject framework defining provincial expectations for reading informational text (BC Ministry of Education, 2002). While teachers in different subject areas also held unique expectations of students based on the domain and topics under study, all teachers in this large, urban school district within British Columbia adopted some common expectations of students as defined within this provincial framework (e.g., for students to build meaning and work actively with information when learning from texts rather than focusing on reproducing or repeating information).

Further, to support aggregating data across PBA variants, scoring procedures allowed for establishing common dimensions against which all responses could be judged (see BC Ministry of Education, 2002). One researcher worked with school teams to collaboratively score PBAs to ensure consistency in application of criteria. When scoring, teachers looked across responses to each of the questions to judge the quality of student performance on a given dimension. Each student's performance was judged for each dimension on a scale from 1 (does not meet expectations) to 7 (exceeds expectations). Teams also assigned an overall, "snapshot" score on the same 7-point scale to capture the level of students' performance across dimensions.

In the research reported here, we employed just the overall snapshot score as a holistic but multi-dimensionally grounded assessment of students' LTR performance. Note that, compared to class grades as a measure in research, the advantages of our teacher-assigned snapshot scores were that: (1) they were situated in the same task as was referenced in the accompanying LTRQ; (2) they were directly focused on LTR in a particular classroom context; (3) criteria for scoring were standardized across classrooms and grade levels; and (4) researcher-led, team-scoring ensured consistency in criteria interpretation. Note that, while PBAs were developed and scored for all classrooms, given the logistics of the larger study, data available to the research team came from 199 of the 646 participating students.

Analyzing the LTRQ and PBA data

As a first step in creating profiles of students' LTR engagement for each of our model constructs (see Figure 1), we conducted frequency analyses to identify the percentage of students at a given level of aggregation who gave one of the top two responses (e.g., "often" or "almost always") to relevant LTRQ items. We examined case-to-case differences using both chi-square analyses and analyses of variance, both of which yielded parallel findings (see Figure 2 for an example). To aid interpretation of the meaning and significance of the profiles (i.e., in relation to understanding individual-context interactions in SRL), we carefully linked patterns observed in different classrooms to the case study data we were collecting. For example, we drew from field notes from team scoring meetings to consider teachers' initial interpretations of PBA data. Once class-level profiles from the PBA and LTRQ were developed, we met with school teams to present and interpret class-, domain-, grade-, and school-level patterns. We kept detailed field notes documenting teachers' and our perceptions about how patterns observed related to features of contexts. Finally, in both the Fall and Spring, teachers were interviewed and asked to describe the meaning of the data for their students. We drew from the Fall interviews in this research to help in interpreting the situated meaning of the assessment data presented here.

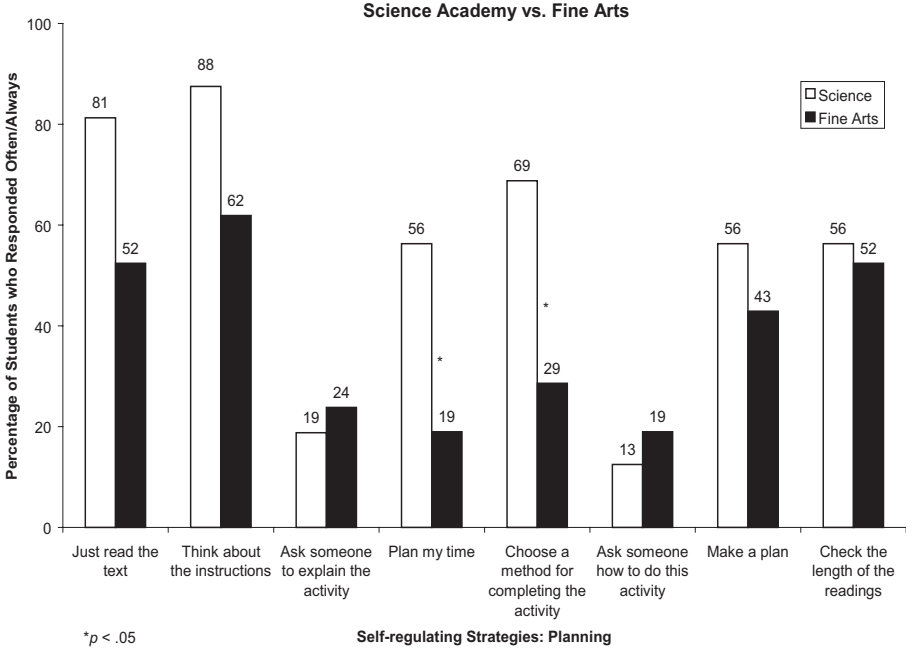


Figure 2:
Planning Profile for School 3, grade 7 students reading in Science in either a Science (n = 16) or Fine Arts Academy (n = 21)

Next, we conducted exploratory factor analyses (FA) in order to identify stable and reliable dimensions that characterized students' responses to the LTRQ. Teachers were finding the item-level LTR profiles graphically represented to be useful in describing LTR engagement for their students (e.g., they could "see" their students in the data; they built from the data to identify goals and set directions for instruction; see Schnellert et al., 2008). But, to support construction of multidimensional LTR profiles, we also wanted to explore whether reliable, theoretically-coherent dimensions would emerge from the pretest LTRQ data collected in this year of the project. To that end, we used Principal Axis Factoring with oblique rotation (oblimin, delta = 0) to group correlated items (Tabachnick & Fidell, 2001). Criteria for judging the adequacy of extraction and the number of factors included eigenvalues greater than 1, communalities greater than .295 and reliability estimates (Cronbach's Alpha) greater than .60 for each dimension. This approach yielded 23 dimensions that mapped clearly onto the key constructs we sought to measure using the LTRQ (see Table 2). In further research, we are using con-

Table 2:
Results from our Exploratory Factor Analysis

General Category	Dimensions	# of items	Cronbach's Alpha
Motivation	Perceptions of competence and control	12	.70
	Controllable attributions	2	.64
	External attributions	2	.62
	Task Value	2	.61
	Positive Personal Goals	4	.75
Emotions	Positive emotions	8	.64
	Stress and Worry	7	.77
Task Understanding	Positive Task Interpretation	7	.75
	Positive Criteria	16	.89
Self-Regulating Strategies	Planning	4	.73
	Monitoring: learning	5	.76
	Monitoring: work progress/methods	4	.71
	Adjusting: working with text & rereading	5	.71
	Adjusting: linking information	2	.75
	Adjusting: work management	2	.68
	Emotion/Motivation control	4	.62
	Self-evaluating	4	.66
Reading & Learning Strategies	Working with information	12	.82
	Working with text	5	.62
Ways of Working	Focus on memory	5	.68
	Help-seeking	4	.69
	Disengaged	6	.72
	External focus	5	.63

firmatory FA to determine whether and how the dimensions uncovered here might be valid in other contexts.

We used these dimension scores in various other analyses. For example, we used correlational analyses to check for relationships between dimensions and the PBA snapshot score. To determine whether different groups of students could be distinguished within the sample based on multidimensional LTR profiles (cutting across motivation, emotion, cognition, and metacognition), we also entered LTRQ dimension scores into a two-step hierarchical cluster analysis procedure using Ward's algorithm (Hair, Anderson, Tatham, & Black, 1998). The squared Euclidian distance was used to calculate the measures of similarity between clusters, as is recommended when using Ward's method. We first ran the SPSS hierarchical procedure to identify a manageable number of clusters by cases, using the agglomeration coefficient as an indicator of cluster distinctiveness. This first step suggested either a 3- or 4-cluster solution. We then reran the hierarchical cluster analysis, constraining the results to 3- or 4-clusters. We ultimately selected the 4-cluster solution as most meaningful, based on patterns and on ANOVA and post-hoc analyses of mean score differences for each of the LTRQ dimensions. Finally, we used a combination of correlational and chi-square analyses to explore how cluster membership was distributed across contexts and was related to performance.

Results

In upcoming sections, we present findings relevant to our four research questions, focusing in turn on: (1) the relationship between students' self-reported LTR profiles and activity/task demands, (2) whether students' self-reports allowed construction of coherent cross-construct LTR profiles (i.e., across emotions, motivation, cognition, and metacognition), (3) observed relationships between self-reported LTR profiles and LTR performance, and (4) how patterns in these areas were moderated by individual-context interactions.

Relationship between students' self-reported LTR profiles and activity demands

To assess the relationship between students' perceptions about LTR activities and activity demands, we started by creating class-level SRL profiles for each of the constructs assessed by the LTRQ (see Figure 1). We interpreted patterns for each classroom in light of the information we had collected about the context and the students within each class. Then we conducted comparisons at different levels of aggregation to identify patterns that were robust across cases (i.e., classes). Inspection of construct-by-construct profiles across levels of aggregation suggested a number of patterns robust across classes, albeit with some important variability.

First, one pattern apparent when data were aggregated across all 31 classrooms was that the secondary students in our overall sample reported relatively high self-perceptions of

competence and control while LTR (e.g., roughly 90% suggested they could be successful in different aspects of LTR). This general finding was encouraging, given that high perceptions of self-efficacy have been associated with students' productive engagement in learning (Bandura, 1993). That said, data also suggested ways in which perceptions of competence and control varied depending on the learning histories, strengths and challenges students brought to LTR activities in particular settings. For example, the classroom-level profile for students working in a class targeted for less academically-successful students (e.g., School 4, grade 12 students studying Communications) revealed strikingly low levels of self-efficacy (e.g., only 42% of students felt they could often or almost always succeed in an LTR activity). In contrast, across subject areas in French-immersion (Science and Humanities), most often chosen in our participating district for more academically successful students by more highly educated parents, up to 100% of students reported high self-perceptions of competence and control. For example, 100% of School 3, grade 8 students reading in Humanities in the French Immersion program perceived that they could often or almost always do a good job of following instructions when LTR.

When reporting self-efficacy profiles to teachers, it became evident that interpretation of data, and implications for instruction, needed to be derived from given knowledge of the contexts in which students were working. For example, in data interpretation meetings during which teachers interpreted profiles that included very high self-efficacy, several teachers were at first encouraged, but then reconsidered the accuracy of their students' self-perceptions. Indeed, a significant pre-posttest shift for one set of students (School 3, grade 7 students studying in Science in the Science Academy) was that their initially inflated self-perceptions of competence and control declined to positive but more reasonable levels as they gained more experience with LTR at the secondary level. In his end-of-the-year interview, the classroom teacher interpreted this change as a positive "reality check," suggesting that his students had become better aware of LTR demands in Science and better calibrated in judging performance (Butler & Winne, 1995).

One additional case study example illustrates how it was critical to interpret data in context. In a team meeting focused on the self-efficacy profiles for a School 2 classroom in which grade 11 students were studying Science and Technology, we noticed what appeared to be an inconsistency in student responses. While most students self-reported that they could often or almost always achieve a good mark when LTR, they also reported low self-perceptions of competence and control across all other items (e.g., I can succeed). The classroom teacher demystified this apparent contradiction by explaining that, with this group of very demoralized and disengaged students, she had adopted the practice of assigning high marks for just turning in work. Thus, in this context, students seemed to recognize the disassociation between the quality of their performance while LTR and the marks they could achieve. As in prior research (e.g., Cartier, Chouinard, & Butler, 2008), this finding linked students' self-reports to classroom evaluation practices. At the same time, this case study example illustrates the benefit of our approach to assessing students' self-perceptions of their engagement in LTR (through the LTRQ), which allowed both for creating context-sensitive, construct-level profiles based on item-by-item responses, as well as averaging across items to create reliable dimensions.

A second robust finding across classes was that students reported choosing few active self-regulating strategies while LTR. For example, an aggregated profile for *planning* across schools and grades showed that only a fraction of students reported often or almost always *planning their time* (25%), *choosing a method for completing an activity* (38%) or *making a plan* (29%). These findings suggest that, at least for the kinds of LTR activities that our teachers perceived to be typical in schools (a criterion for selecting tasks for the PBA), participating students did not report pre-thinking about time, resources, or strategies as much as teachers had hoped or expected. That said, although our aggregated findings revealed a pattern common across classrooms, and although this overall pattern was evident across most classes, our case study approach again revealed important variability. For example, Figure 2 shows how the pattern for planning varied between School 3, grade 7 students reading in Science within either the Fine Arts or Science Academy.

A third robust pattern in our findings pertained to students' self-reports of cognitive (i.e., reading and learning) strategies when LTR. Our findings revealed that students were very likely to report using strategies for working with text (e.g., paying attention to bold or underlined words) along with some general reading strategies (e.g., think about what I already know; search for meaning). However, consistent with prior research (e.g., Cartier, 2003), they were much less likely to report using more active strategies for working with information (e.g., finding links between information; thinking of examples; applying ideas; summarizing in their own words). At the same time, students were more likely than teachers had hoped to focus on rote learning and memorizing (e.g., repeating key words, details, or facts).

To illustrate these general patterns, as well as important variability, consider the profiles in reported use of reading and learning strategies for School 2, grade 8 students reading in Humanities in either French Immersion or English programs. Consistent with their high self-perceptions of competence and control (as described above), students in French Immersion Humanities classrooms in this school also reported among the highest use of reading and learning strategies. These strategically focused students reported using text features to help build understanding (e.g., looking at titles, subtitles and at bold or underlined words). The vast majority reported thinking of what they already knew (82%), focusing on important themes and ideas (79-88%), and searching for meaning (85%). However, even among this group, students were much less likely to report using the most active learning strategies, such as finding links between information (60%), applying information (65%), summarizing information in their own words (56%), regrouping information (44%), or thinking of examples (37%). Students were as or more likely to report using strategies for memorizing (e.g., 77% reported memorizing key words). Although characterizing themselves as much less strategic in comparison, the profile of School 2 students learning Humanities in English showed a similar overall pattern (with the most active reading and learning strategies being reported by the fewest students).

In sum, across cases our data revealed that our sample of students reported using a limited set of reading and learning strategies when LTR. Based on an observation of parallel patterns in responses to questions on task performance and performance criteria, we concluded that in general students had an impoverished understanding of the cognitive

processing demands of LTR activities. Overall students' responses focused most on working with text and simple understanding, too much on memorizing, and not sufficiently on more active strategies necessary for deep comprehension and learning (Cartier, 2000; Duke & Pearson, 2002; Vacca et al., 2005).

Multidimensional LTR profiles

During classroom-level analyses for LTRQ constructs, we noted that, if we looked across constructs for any given class, we observed a theoretically-predictable and coherent response pattern. For example, a coherent, cross-construct LTR profile was evident for the School 2, grade 8 students (described above) in both the English and French Immersion programs. French immersion students' ratings were higher than those of their English program peers on all of the positive model constructs. In contrast, students in the English program were found to: feel less in control over learning (e.g., lower self-perceptions of control; external attributions); experience less positive emotions; report less frequent use of most types of cognitive and self-regulating strategies; be more externally focused; and rely more on others in accomplishing and judging the quality of their work (e.g., help-seeking during planning).

To further examine the relationships between emotion, motivation, cognition, and metacognition within students' self-reported LTR profiles, we conducted exploratory factor analyses to identify dimensions reflected in items on the LTRQ (see Table 2). We found 23 dimensions clustered into 6 main categories: (1) Motivation (perceptions of competence and control; controllable attributions; external attributions; task value; positive personal goals); (2) emotions (positive emotions; stress & worry); (3) task understanding (positive task interpretation; positive performance criteria); (4) self-regulating strategies (planning; monitoring: learning; monitoring: work progress/methods; adjusting: working with text & rereading; adjusting: linking information; adjusting: work management; emotion/motivation control; self-evaluating); (5) reading and learning strategies (working with information; working with text); and (6) ways of working (focus on memory; help-seeking; disengaged; external focus).

We then used cluster analyses to determine if coherent cross-construct profiles could be identified based on dimension scores. These analyses clustered students into one of four profiles, which we labeled: *actively engaged*, *high stress/actively inefficient*, *disengaged*, and *passive/inactively efficient* (see Table 3). To help in interpreting these LTR profiles, in Figures 3 and 4 we provide graphical representations of z-scores for two of the clusters based on a comparison to the entire sample (*actively engaged*; *high stress/actively inefficient*).

In the *actively engaged* cluster were 262 students (41% of the sample) whose profiles reflected a positive pattern across motivation, emotions, task interpretation, and self-reported use of cognitive and self-regulating strategies. As can be seen in Figure 3, the only below-the-overall-mean z-scores for these students were for external attributions, disengagement, and experiences of stress and worry. In contrast, the profiles of the 83 students in our *disengaged* cluster (13% of the sample) reflected exactly the opposite pattern.

Table 3:
An Overview of Mean Differences on Dimensions for the Four Cluster Profiles

General Category	Dimension	Actively Engaged *n* = 262 (41%)	High Stress/ Actively Inefficient *n* = 135 (21%)	Disengaged *n* = 83 (13%)	Passive/ Inactively Efficient *n* = 166 (26%)
Motivation	Perceptions of Comp. & Control	2.91 (>2, 3, 4[a])	2.55 (<1,4[a]; >3[a])	2.30 (<1,2,4[a])	2.76 (<1[a]; >2,3[a])
	Controllable attributions	3.67 (>2, 3, 4[a])	2.97 (<1,4[a]; >3[a])	2.44 (<1,2,4[a])	3.22 (<1[a]; >2,3[a])
	External attributions	1.73 (<2,3a; >4[c])	2.61 (>1,4[a])	2.58 (>1,4[a])	1.54 (<1[c]; <2,3[a])
	Task value	3.00 (>2, 3, 4[a])	2.30 (<1[a], >3[a])	1.94 (<1,2,4[a])	2.49 (<1[a]; >3[a])
	Positive personal goals	3.65 (>2, 3, 4[a])	3.09 (<1,4[a]; >3[a])	2.63 (<1,2,4[a])	3.30 (<1[a]; >2,3[a])
Emotions	Positive emotions	3.02 (>2, 3, 4[a])	2.62 (<1[a]; >3[a])	2.29 (<1,2,4[a])	2.67 (<1[a]; >3[a])
	Stress and Worry	1.89 (<2[b], <3[c])	2.11 (>1[b]; >4[a])	2.10 (>1[b]; >4[a])	1.75 (<2,3[a])
Task Under-standing	Positive task interpretation	3.24 (>2, 3, 4[a])	2.94 (<1[a]; >3[a])	2.69 (<1,2,4[a])	2.94 (<1[a]; >3[a])
	Positive criteria	3.23 (>2, 3, 4[a])	2.78 (<1[a]; >3[a])	2.35 (<1,2,4[a])	2.84 (<1[a]; >3[a])
SRL Strategies	Active planning	2.67 (>2, 3, 4[a])	2.13 (<1[a]; >3[a])	1.63 (<1,2,4[a])	2.02 (<1[a]; >3[a])
	Monitoring: learning	3.21 (>2, 3, 4[a])	2.70 (<1[a]; >3[a])	2.14 (<1,2,4[a])	2.69 (<1[a]; >3[a])
	Monitoring: task progress/methods	2.92 (>2, 3, 4[a])	2.38 (<1[a]; >3[a])	1.84 (<1,2,4[a])	2.24 (<1[a]; >3[a])
	Adjusting: work w/text & reread	3.26 (>2, 3, 4[a])	2.87 (<1[a]; >3[a])	2.27 (<1,2,4[a])	2.79 (<1[a]; >3[a])
	Adjusting: making links	2.54 (>2, 3, 4[a])	1.99 (<1[a]; >3[a])	1.46 (<1,2,4[a])	1.89 (<1[a]; >3[a])
	Adjusting: work management	2.94 (>2, 3, 4[a])	2.50 (<1[a]; >3[a]; >4[c])	1.86 (<1,2,4[a])	2.26 (<1[a]; >3[a]; <2[c])
	Emotion/motivation control	2.89 (>2, 3, 4[a])	2.54 (<1[a]; >3,4[a])	1.86 (<1,2,4[a])	2.21 (<1,2[a]; >3[a])
	Self-evaluating	3.00 (>2, 3, 4[a])	2.46 (<1[a]; >3[a])	1.73 (<1,2,4[a])	2.33 (<1[a]; >3[a])
Read/Learn Strategies	Working with information	2.84 (>2, 3, 4[a])	2.38 (<1[a]; >3[a]; >4[c])	1.87 (<1,2,4[a])	2.26 (<1[a]; >3[a]; >2[c])
	Working with text	2.90 (>2[b], >3,4[a])	2.71 (<1[a]; >3[a], >4[b])	2.12 (<1,2,4[a])	2.50 (<1[a]; >3[a]; >2[b])
Ways of Working	Focus on Memory	2.36 (>2, 3, 4[a])	2.14 (<1[a]; >3[a]; >4[b])	1.78 (<1,2[a])	1.91 (<1[a]; <2[b])
	Help seeking	2.56 (>3,4[a])	2.69 (>3,4[a])	2.16 (<1,2[a])	2.15 (<1,2[a])
	Disengaged	1.45 (<2, 3[a])	1.77 (>1,4[a]; <3[a])	2.16 (>1,2,4[a])	1.55 (<2,3[a])
	External focus	2.17 (>3[a])	2.09 (>3[a])	1.79 (<1,2[a]; <4[b])	2.04 (>3[b])

Note. Light grey = highest (with ties); Dark grey = lowest (with ties); No fill = mid-range; [a] = p < .001; [b] = p < .01; [c] = p < .05.

Figure 3:
An "actively engaged" profile

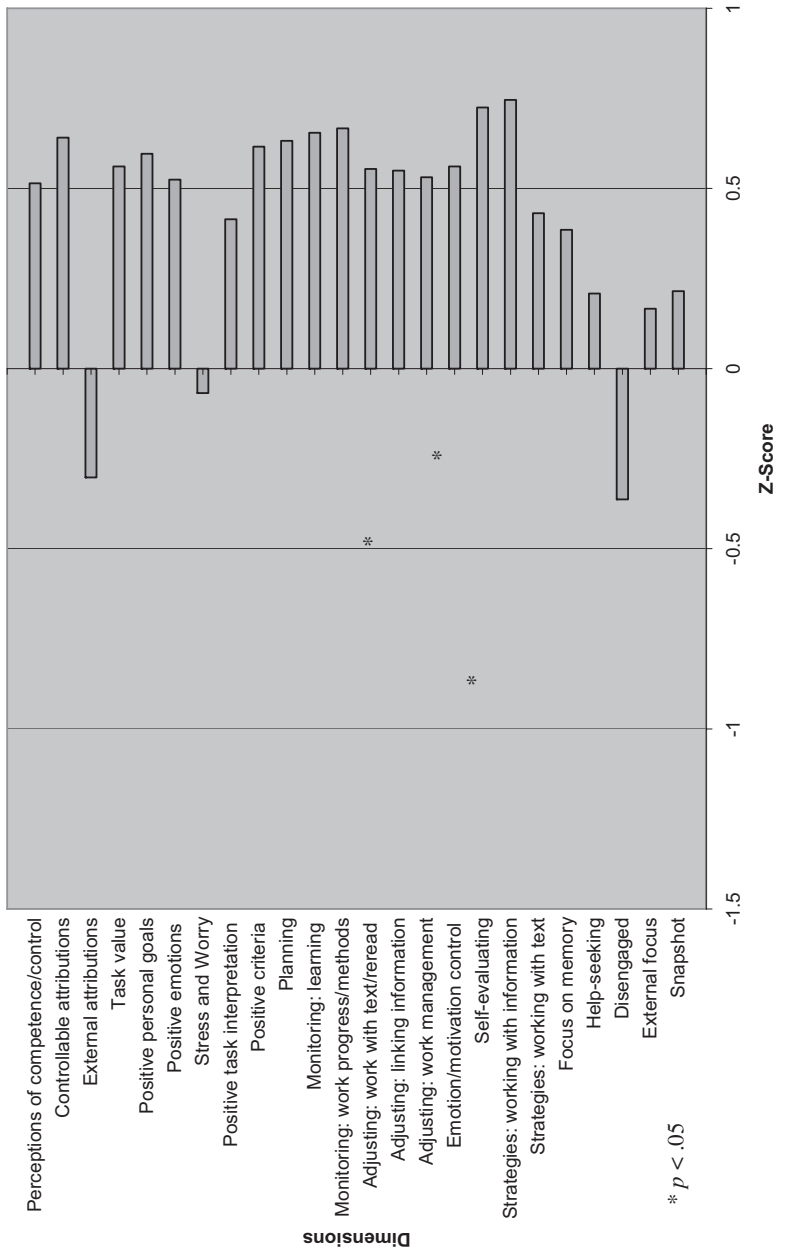
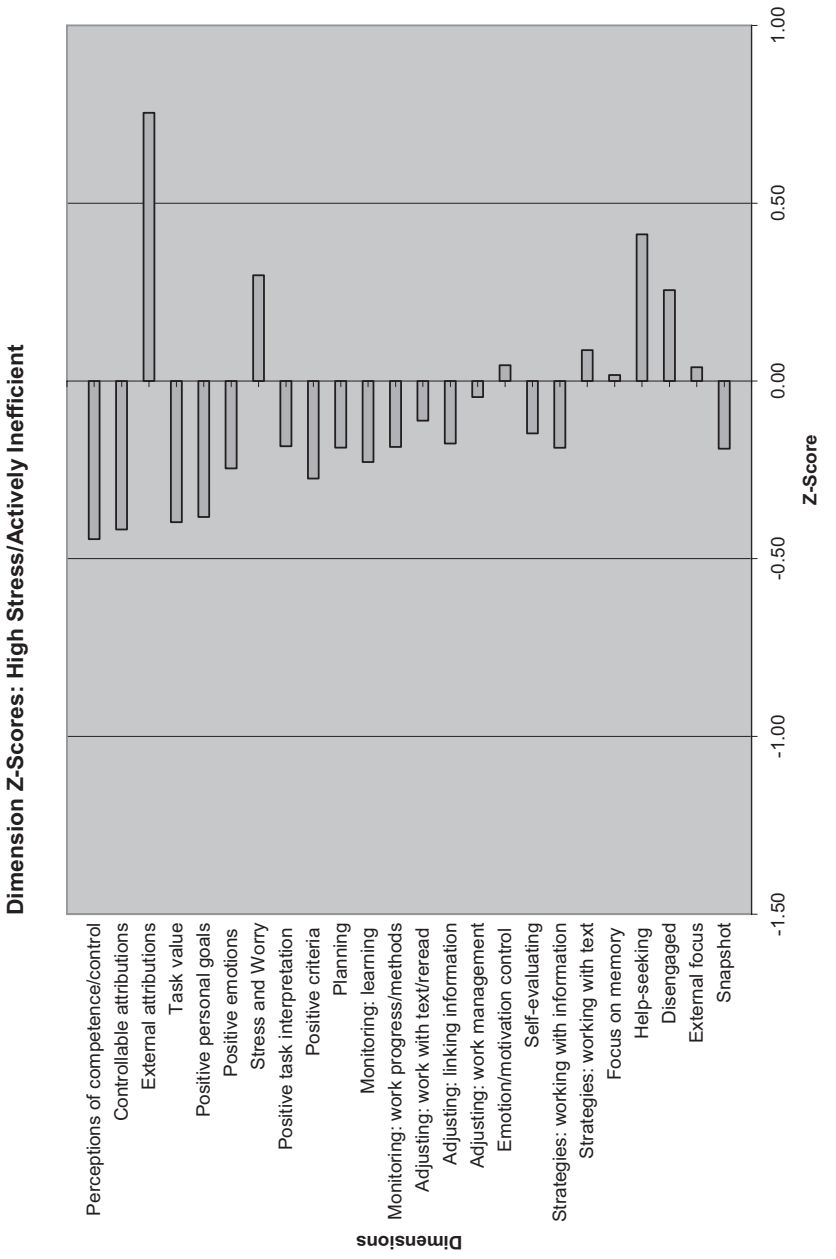


Figure 4.:
A "high stress/actively inefficient" profile



We labeled the profile represented in Figure 4, into which fell 135 students (21% of the sample), *high stress/actively inefficient* (Swanson, 1990). We chose these descriptors to represent two trends in the patterns of students' responses. On one hand these students appeared to have little sense of control over outcomes (low self-perceptions of competence and control; low controllable attributions; high external attributions), an external focus, and high levels of stress and worry. At the same time, while their self-reported use of strategies was actually mid-range (with means falling between "sometimes" and "often;" see Table 3), they were also more likely to report seeking help (when planning and experiencing challenges). Thus, we interpreted this pattern as including students who perceived themselves to be engaging in LTR, but ineffectively, and so were anxious and not at all confident about their ability to succeed.

Our final cluster (see Table 3) included 166 students (26% of the sample), which we labeled *passive/inactively efficient*. We interpreted this group to be passive because they were motivated and positive about their learning experiences (e.g., with strong self-perceptions of competence and control, low stress, positive reading and learning focused goals), but reported the second lowest use of some self-regulating (adjusting: work management; emotion/motivation control; self-evaluating) and cognitive (reading and learning) strategies. At the same time, while not deliberately strategic, these students performed relatively well on the PBA (see below), and so seemed to be "inactively efficient".

Taken together, findings from class-level case studies and cluster analyses converged to reveal coherent, theoretically-predictable relationships among emotion, motivation, cognition, and metacognition in students' self-reported approaches to LTR. These findings suggest that the way in which students perceive their LTR engagement, as reflected in the cognitive and self-regulating strategies they report using, can be related to motivationally-charged perceptions and beliefs (e.g., self-efficacy; task value; attributions), emotions (e.g., stress and worry), personal objectives, and interpretation of outcome and process expectations.

Observed relationships between self-reported LTR profiles and LTR performance

We used two approaches to investigate relationships between students' self-perceptions of their engagement in LTR and LTR performance. First, we calculated correlations between each of the LTRQ dimensions and PBA snapshot scores (see Table 4). These analyses suggested that, when examined at a high-level of aggregation, all but two dimensions (help-seeking and external focus) were significantly, if modestly, related to performance. Relationships were as would be expected given our theoretical framework. For example, self-reported use of working with information strategies was positively related to performance ($r = .28$, $p < .001$), while self-reports of disengagement and PBA scores were negatively related ($r = -.32$, $p < .001$). We note that these correlations are only moderate. However, we suggest that relationships between the LTRQ and the PBA are practically significant considering the amount of variance likely accounted for by other prominent variables not taken into account here (e.g., prior achievement).

Table 4:
Correlations between Dimensions and the Performance-Based Reading Assessment

General Category	Dimension	*N*	*R*	*p* <
Motivation	Perceptions of Competence & Control	199	.23	.001
	Controllable attributions	199	.18	.01
	External attributions	199	-.15	.05
	Task Value	199	.23	.001
	Positive personal goals	199	.30	.001
Emotions	Positive emotions	199	.26	.001
	Stress & worry	199	-.13	.07
Task Understanding	Positive task interpretation	199	.18	.05
	Positive criteria	197	.23	.001
SRL Strategies	Planning	199	.13	.07
	Monitoring: learning	199	.19	.01
	Monitoring: task progress/methods	199	.20	.01
	Adjusting: working with text & rereading	199	.27	.001
	Adjusting: linking information	199	.20	.01
	Adjusting: work management	199	.18	.05
	Emotion/Motivation control	198	.24	.001
	Self-evaluating	198	.26	.001
Reading/Learning Strategies	Working with information	199	.28	.001
	Working with text	199	.16	.05
Ways of Working	Focus on memory	199	.13	.06
	Help-seeking	199	-.02	n.s.
	Disengaged	199	-.32	.001
	External focus	199	.04	n.s.

In a second approach to relating LTRQ profiles to LTR performance, we examined differences in LTR performance (on PBAs) as a function of cluster membership (see Table 6). Here an ANOVA revealed statistically reliable differences in snapshot scores considering all four clusters simultaneously (F (3, 195) = 3.504, p < .02). Post-hoc analyses showed reliable differences in PBA scores between actively engaged and disengaged students (p < .05). At the same time, we noticed intriguing trends suggesting that the second highest performance could be observed in the "passive/inactively efficient" group, with "high stress/actively inefficient students" ranking third. Although further research is clearly warranted to explore this trend, it is interesting to note that students reporting a passive/inactively efficient profile appeared to achieve moderate success without being as deliberately strategic.

It appears, then, that a solid number of our participants (41%) reported a positive engagement in LTR that could be related to the highest levels of LTR performance. Less encouragingly, a troubling number (13%) of lower performing students reported being disengaged from learning, while the remainder (45%) reported profiles that were definitely problematic. Neither high stress/actively inefficient students nor passive/inactively efficient students

appeared to be aware of how to marshal their resources deliberately to meet demands in LTR activities. Finally, our findings suggest the value of our strategy of looking "upwards" and "downwards" across levels of aggregation. Here correlations between dimensions and PBAs appeared to be mediated by individual differences reflected in distinctive profiles of engagement (e.g., represented by different "clusters" of responses).

Table 5:
ANOVA Results[a] on Mean Scores for the Subsets of Students in Clusters who Completed a Performance-Based Measure of Reading

	n	***M***	***SD***	***SE***	**Effect sizes**			
Cluster					**C1**	**C2**	**C3**	**C4**
Cluster 1: Actively Engaged	75	**3.48**[b]	1.45	0.17		.42	**.67**	.19
Cluster 2: High Stress/Actively Inefficient	40	2.93	1.14	0.18	.42		.28	.22
Cluster 3: Disengaged	29	**2.62**[b]	1.08	0.20	**.67**	.28		.48
Cluster 4: Passive /Inactively Efficient	52	3.21	1.39	0.19	.19	.22	.48	
Total	*196*	*3.17*	*1.35*	*0.10*				

[a]F (3, 195) = 3.504, p < .02, two-tailed test.
[b]Bonferroni post-hoc analyses revealed statistically reliable differences between means with the same superscript, p < .05, two-tailed test.

How observed patterns were related to individual experiences and context

In our report to this point, we have consistently highlighted how observed patterns were moderated by individual-context interactions. To elaborate on those observations, in a last set of analyses we investigated how students' self-reported LTR profiles varied depending on what individuals brought to the contexts in which they were working (see also Hadwin, Winne, Stockley, Nesbit, & Woszczyna, 2001). To explore this question, we compared the percentage of students within different groupings who fell into each of the four clusters (Miles & Huberman, 1994). We used chi-square analyses to help in determining if any observed differences were statistically reliable (see Table 6).

As a first example, Table 6 compares cluster membership of students who were receiving learning assistance with that of peers who were not similarly struggling, aggregated across classes. As might be predicted from past research (see Butler, 1998, 1999; Cartier, 2006), we found fewer students receiving learning assistance in both the actively engaged cluster and in the passive/inactively efficient cluster. Further, as anticipated, a greater proportion of students receiving learning assistance reported being disengaged from learning (e.g., quitting in the face of challenges; seeking to read as little as possible). These findings reveal relationships between one broad individual difference variable and students' self-reported SRL profiles. Consistent with prior research (Butler, 1998; Cartier, 2003), they also underline how students struggling in school are at-risk for disengaging.

Table 6:
Cluster Membership by Gender, Learning Support, and ESL Status

		Gender		Learning Assistance		ESL Status	
Cluster		**Female**	**Male**	**LS**	**No LS**	**ESL**	**Non-ESL**
Actively Engaged	Count	157	105	33	228	38	191
	%	**47%**	34%	34%	**42%**	39%	42%
High Stress/Actively Inefficient	Count	62	73	23	112	37	75
	%	18%	**24%**	24%	21%	**38%**	17%
Disengaged	Count	41	42	26	57	9	48
	%	12%	14%	**27%**	10%	9%	11%
Passive/Inactively efficient	Count	76	90	16	150	14	136
	%	23%	29%	16%	**27%**	14%	**30%**
Total	Count	336	310	98	547	98	450

Note. For Gender: $\chi^2_{\text{gender (2) x clusters (4)}}$ (3, N = 646) = 11.38, p = .01, *Cramér's V* = .13; For Learning Assistance: $\chi^2_{\text{learning assistance (2) x clusters (4)}}$ (3, N = 645) = 22.41, p = .001, *Cramér's V* = .19.; For ESL Status: $\chi^2_{\text{group (2) x clusters (4)}}$ (3, N = 548) = 25.41, p < .001, *Cramér's V* = .22.

As a second example, Table 6 also presents cluster membership by gender, again aggregating across classes. Findings here were that females reported more positive, actively-engaged, strategic profiles than did their male peers. Minor differences were also apparent in percentages of students in high-stress/actively inefficient and passive/inactively efficient profiles, each in favour of males. But Table 7 illustrates how gender differences might also be affected by context. This table compares cluster membership for grade 8 students working in either Humanities or in Science. These data suggest that equal proportions of males and females reported being actively engaged when studying Science (46% and 47%, respectively), but that a significantly larger proportion of females, in comparison to males, perceived themselves to be actively engaged in Humanities (54% vs. 36% for males). Males were more likely to evidence passive/inactively efficient profiles in both contexts.

As a last example, Table 6 presents SRL profiles for ESL learners as compared to those of their peers. As noted earlier, participating ESL students came from diverse cultural backgrounds, but they had in common the challenge to engage successfully in LTR within subject area classroom activities that required considerable Western-based cultural knowledge (e.g., to interpret Social Studies texts) as well as academic-level skills in the language of instruction (Tang et al., 2006). What we found were some encouraging trends for ESL learners. For example, a good proportion of ESL learners fell into the actively engaged profile (39%), roughly the same proportion as peers (42%), while fewer ESL students (14%) fell into the passive/actively inefficient cluster. Significantly, we found the PBA snapshot scores of ESL students (M = 3.43, SD = 1.55) equaled that of

Table 7:
Gender Differences by Context: Grade 8 Humanities vs. Science and Technology

Cluster	Humanities		Science & Technology		Total
	Male	Female	Male	Female	
Actively Engaged	45	68	13	17	143
	36%	**54%**	46%	47%	45%
High Stress/Actively Inefficient	22	19	2	3	46
	18%	15%	7%	8%	15%
Disengaged	15	10	1	3	29
	12%	8%	4%	8%	9%
Passive/Inactively Efficient	43	30	12	13	98
	34%	24%	43%	36%	31%
Total	125	127	28	36	316

Notes. $\chi^2_{\text{gender (2) x clusters (4) within humanities}}$ (3, N = 252) = 8.20, p < .05, Cramér's V = .18; $\chi^2_{\text{gender (2) x clusters (4) within Science \& Technology}}$ (3, N = 64) = .79, p = .85

non-ESL peers (M = 3.32, SD = 1.36). That said, we also observed greater challenges for ESL learners. For example, more ESL learners fell into the high stress/actively inefficient group (38%) when compared to peers (17%). Fewer ESL students endorsed positive personal goals for understanding and learning (t = 3.27, p < .01, d = .35). ESL learners were more likely to report stress (t = -3.09, p < .01, d = -.33), attributions to external (t = - 3.28, p <. 01, d = -.36) rather than controllable (t = 2.72, p < .01, d = .30) factors, and lower self-perceptions of competence and control (t = 4.61, p <. 01, d = .49).

In sum, our results suggest that LTR engagement could be related to experiences students brought to contexts, such as a history of learning challenges. We also observed interactions between students' backgrounds and the contexts in which we were working (e.g., gender in Humanities vs. Science). To elaborate this last conclusion, we complemented our aggregated view of ESL students with one final analysis. Specifically, within our data set were nine ESL students who were concurrently enrolled in two different kinds of classes, an ESL English class that was designed to support ESL students' cultural transition and acquisition of language and academic skills, and an English 10 class that included a diverse set of learners. What we observed was that six of the nine students reported similar SRL profiles across the two classes (most frequently high stress/actively inefficient), but that three reported SRL profiles that differed across contexts. This finding suggests, again, the importance of focusing attention on individual-context interactions.

Discussion, implications, and conclusions

In conducting the research reported here, our goals were to develop a methodological framework for investigating self-regulated learning through reading (LTR), identify patterns in LTR engagement for secondary students within and across contexts, and

advance theoretical understanding about how SRL is situated in multiple layers of context. In our concluding comments, we highlight implications emerging from our pursuit of these goals.

First, this research offers an innovative approach to the study of SRL. Calls have consistently been issued to build methodological frameworks for studying SRL as situated in context (Butler, 2002; Butler & Cartier, 2005; Cartier, 2003; Winne & Perry, 2000). Our research contributes here in two ways. First, our methodological framework borrowed from the logic of multiple case study designs (Merriam, 1998; Yin, 2003) in ways that allowed us to interpret data aggregated at different levels while still retaining the situated meaning of data. A particular contribution here was our development of a productive strategy for juxtaposing quantitative and case study analyses.

Second, our research contributes two validated research tools to the study of SRL. We would note that much criticism has been levied, fairly, at self-report tools as a measure of SRL behaviors (Butler, 2002; Winne & Perry, 2000). But our perspective is that self-report tools are needed to provide insight into students' understandings about themselves as learners and about learning processes. Thus, the LTRQ adds to researchers' methodological tool kits by providing, not a measure of students' use of cognitive or self-regulating strategies, but rather a nuanced portrait of students' perceptions about their engagement in LTR and, more specifically, about LTR process and outcome requirements. As a complement to the LTRQ, the PBA (Brownlie et al., 2006) is grounded in a multidimensional analysis of students' LTR performance and linked to curriculum-based performance expectations. In our development and implementation of both tools, our measurement of SRL remained situated. Both measures focus, not on SRL in general, but on how a learner responds to a particular kind of LTR activity as situated within a particular subject-area classroom. Data from our two, contextualized assessment tools (LTRQ plus PBA) were linked to common, curriculum-based tasks completed within the same classroom settings.

In spite of these contributions, there are clearly ways in which we can develop, extend and improve upon on our methodology in future research. For example, our analysis of individual-context interactions could be deepened by focusing attention on cases at the individual level (see Butler, 1995, 1998; Butler et al., 2005; Cartier, 2002). In subsequent projects, we have also refined scoring processes for the PBA so as to allow a more multidimensional analysis of student LTR performance, rather than just relying on overall snapshot scores (see Butler et al., 2008-a, -b). In future projects we will also add to our methodological tool kit a more direct measure of SRL as enacted to enable more direct linking between students' perceptions about LTR activities, engagement in self-regulated LTR, and performance. Future research could also systematically investigate the relative contributions of students' self-reported SRL profiles to performance as compared to other important individual and contextual factors (e.g., prior achievement; evaluation practices).

What can we learn from our present findings about LTR engagement for students at the secondary level? As described earlier, subject-area teachers routinely expect students not only to understand texts they are asked to read, but also to actively learn about and work

with concepts presented therein (Barton, 1997; Cartier, 2000; Ciborowski, 1995; Ellis & Lenz, 1990; Lindberg, 2003; Vacca et al, 2005). Our findings suggest that secondary students' understanding about LTR activities may not be well matched to these expectations. For example, cross-case SRL profiles revealed limited attention to key strategies for self-regulation (e.g., planning) and for active meaning-making and learning. Cluster analyses showed that less than half of students reported being "actively engaged," while 58% reported less adaptive profiles. These findings are consistent with what we are learning from a similar project in Quebec (Cartier, Butler, & Janosz, 2006), where we found even more problematic SRL profiles among a large sample of students engaged in LTR in Social Studies within disadvantaged neighborhoods.

That said, we also found that SRL profiles varied substantially for individuals working in varying contexts. For example, while overall student self-perceptions of competence and control when LTR were high, some students overestimated their capabilities (e.g., previously high-achieving grade 8 students just entering a French immersion program), while others' self-reports were remarkably well calibrated (e.g., chronically struggling students who recognized they could achieve good marks in spite of continued challenges with reading) (Butler & Winne, 1995). Cluster analyses also revealed how SRL profiles could be related to individual differences (e.g., gender) and prior learning histories (e.g., of struggling students); while case study analyses foregrounded the sensitivity of students' self-regulated LTR profiles to the contexts in which they were working (e.g., gender differences in LTR profiles in Science vs. Humanities; self-efficacy as related to feedback and evaluation practices).

Important implications for practice can be derived from these findings. Elsewhere we have documented how teachers have been energized to shift classroom practices after reviewing the curriculum-based, formative assessment data provided by the PBA and LTRQ (see Butler et al., 2008-a, 2008-b; Schnellert et al., 2008). Our findings here suggest why teachers may have found these tools to be so useful: the assessments generated nuanced classroom-level profiles of students' LTR engagement, highlighting important mismatches between teachers' goals and students' understandings about and performance in LTR (Butler & Cartier, 2004-b; Cartier & Théorêt, 2001). Thus, our findings suggest the value of subject-area teachers utilizing formative curriculum-based LTR assessments to guide classroom practice.

Second, our findings suggest areas where teachers might focus attention to support more effective LTR. Results suggest that teachers should build from students' initial, situated LTR profiles to adapt classroom practice (activities, instruction, evaluation) in ways that foster students' deliberate and productive (1) interpretation of reading and learning demands (i.e., given the activity, subject area, teacher expectations, etc.), (2) use of active meaning making and learning strategies, and (3) use of self-regulating strategies for planning, self-monitoring, self-evaluating, and adjusting approaches in the face of emotional, motivational, or reading or learning challenges (see Butler, 2002; Butler et al., 2008-a, -b; Cartier, 2007; Perry et al., 2004).

At a theoretical level, this research contributes to a more nuanced understanding of the complex quality of secondary students' perceptions about the demands of LTR activities

and their engagement within them. Our findings underline the importance of attending to how students think about the demands of LTR activities (Butler & Cartier, 2004-b; Butler & Winne, 1995; Cartier & Butler, 2004). We found that students' self-reported LTR profiles not only revealed important gaps in their thinking about the process and outcome requirements, but also could be associated with LTR performance. Second, our finding of coherent profiles across constructs through both factor and cluster analyses lends credence to the theoretical model we have developed to study SRL (Butler & Cartier, 2004-a; Cartier & Butler, 2004), and underscores the important interconnections in learning between emotion, motivation, cognition, and metacognition (Corno, 1993, 1994; Pintrich, 2000; Zimmerman & Schunk, 2001). Finally, while all models of SRL focus attention on bi-directional influences between individuals and contexts in which they are working, our research contributes by validating an elaborated theoretical framework within which individuals' situated participation in LTR might be understood.

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