

**Student Engagement in Two Singaporean Secondary
Schools**

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Tiivistelmä – Abstract <p>Student engagement is important to prevent school dropout and enhance school experiences. Engagement of secondary 2 and 3 students in Singapore was studied with Student Engagement Instrument (SEI) and its relation to burnout. The SEI measured students' cognitive and affective engagement while burnout was examined using School Burnout Inventory (SBI). An electronic survey was administered to 335 students from two secondary schools. The engagement and burnout across grades, streams, gender, academic achievements and family background were studied. Evidence showed lower engagement for secondary three than two students, while ethnicity had a major impact on engagement level, with minority ethnic groups (Malays, Indians and Others) being more engaged than Chinese, the largest ethnic group. Lastly, engagement and burnout had a negative but weak correlation.</p>	
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ABBREVIATIONS

EXP	Express stream
N(A)	Normal (Academic) stream
N(T)	Normal (Technical) stream
CCA	Co-Curricular Activities
PSLE	Primary School Leaving Examination
PEI	PETALS Engagement Indicator (Instrument from Singapore)
SEI	Student Engagement Instrument
SBI	School Burnout Inventory

GLOSSARY OF SINGAPORE SECONDARY EDUCATION SYSTEM

Depending on their PSLE results, students are placed in the respective stream:

Normal (Technical) stream (N(T)): A four year education leading to the Singapore-Cambridge General Certificate of Education Normal (Technical Level), also known as GCE N(T)-Level examination.

Normal (Academic) stream (N(A)): A four/five-year education. In the fourth year, students sit for the Singapore-Cambridge General Certificate of Education Normal (Academic Level), also known as GCE N(A)-Level examination. Students who performed well at the GCE N(A)-Level examination may sit for the GCE O-Level examination in their fifth year.

Express stream (EXP): A four-year education in which students sit for the Singapore-Cambridge General Certificate of Education (Ordinary Level), also known as GCE O-Level examination in their final year.

Special and integrated programme: Consist of students who did well academically during PSLE, and have the option to attend top schools in Singapore. (Schools in study exclude this group of students.)

Approximately 15% of students are in N(T), 25% in N(A), 50% in EXP and 10% in Special (Liu, Wang & Parkins 2005, 569).

Co-Curricular Activities (CCA): After-school non-academic activities that secondary school students have to take part in.

1 INTRODUCTION

Student engagement is “an academic concept developed during 1970s and 1980s, with many early constructs emphasizing time-on-task and participation” (Harris 2008, 58). Initially, it was used to differentiate between engaged and disengaged students. This helped increase achievement; improve behaviour; increase school belonging and decrease drop-out rate. More recently, it shifted from student’s reactive response and poor behaviour to proactive learning (Parsons & Taylor 2011, 7).

Student engagement can predict student’s achievement and provide feedback for teachers (Reeve 2012, 162). However, barriers to student engagement include cultural diversification, special needs and distractions away from school (Newmann 1992, 3). Moreover, as students advance academically, engagement may decline (Archambault, Janosz, Morizot & Pagani 2009, 409). Therefore, there is a need to re-engage the disengaged (Zyngier 2008, 1766).

Although researchers agree that student engagement is multidimensional (Reeve 2012, 150), it is difficult to define student engagement due to multiple classifications in literature (Parsons & Taylor 2011, 4). Different classifications have been presented and the rationale justified. Opinions also differ to include the “opposite of engagement” (Skinner & Pitzer 2012, 22).

Student engagement in Singapore was investigated and extended on previous research. The education system and instrument used in Singapore were first described. From the literature, different dimensions of student engagement and burnout were studied. Finally, theoretical framework and research questions were established.

1.1 Education System of Singapore

Singapore promotes engaged learning, where learners construct meaning, communicate, collaborate, solve problems, self-regulate their learning and learn intentionally in a facilitated learning environment (Teo, Chai, Hung & Quek 2004, 34). Apart from learning, students above primary 2 participate in a Co-Curriculum Activity (CCA)

to enhance social interaction. This comprises of clubs and societies, sports, uniform group and performing arts. Generally, Singapore's education system consists of behavioural, affective and cognitive engagement. Since emphasis is placed on engaging students, student engagement becomes important to measure and identify disengaged students.

At the end of primary school education, students sit for the Primary School Leaving Examination (PSLE). Depending on results, students were streamed into four paths from high to low achievers; namely Special, EXP, N(A) and N(T). Borderline students have the option to enroll in a lower stream. Although opting to a higher stream is impossible, students can transfer to a higher stream if they meet the academic requirements during secondary school (Ministry of Education Singapore¹). CCA is compulsory in secondary school and graded for further studies.

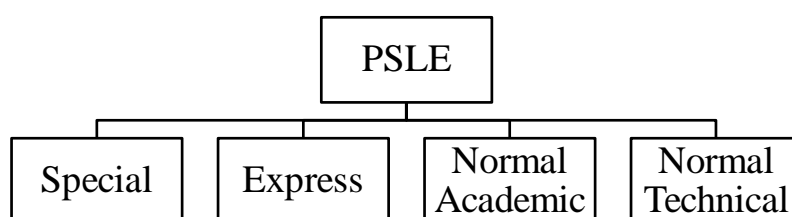


FIGURE 1 STREAMING FROM PRIMARY TO SECONDARY BASED ON PSLE SCORE (See glossary for more details)

1.2 Measuring Student Engagement in Singapore

PETALS Engagement Indicator (PEI) developed in Singapore measures student engagement in classroom settings. The PEI is a 40-item student self-reported survey measuring behavioural, affective and cognitive engagement in addition to **P**edagogy, **E**xperience of learning, **T**one of environment, **A**ssessment and **L**earning Content. Although learning content was strongest in influencing engagement, researchers concluded that factors excluded may also affect engagement (The PETALS™ Primer 2007, 49).

Since other factors may play a part, it is thus important to conduct further research to better understand engagement in Singapore. This study aims to investigate student engagement in Singapore using Student Engagement Instrument (SEI), measuring affec-

¹ <http://www.moe.gov.sg/education/secondary/courses/>

tive and cognitive engagement on a broader level. In addition, burnout is assessed using School Burnout Inventory (SBI) and relationship between the two is then explored.

2 STUDENT ENGAGEMENT

Motivation comes from students' desire to participate in the learning process (Lumsden 1994, 1) and is essential to understanding engagement. Engagement is the resultant of one's motivation (Skinner & Pitzer 2012, 22). However, students can be motivated but not engaged (Newmann 1992, 13). Motivation is translated to engagement when students' needs for relatedness, competency and autonomy are met. Inability to fulfil these needs would lead to disengagement (Skinner & Pitzer 2012, 27).

Specifically, disengaged students may eventually drop out due to a "misfit between student needs and expectations and school demands and benefits" (Archambault et al. 2009, 409). Mere physical presence in school is insufficient to attain desired learning outcome. Therefore educators should constantly try to enhance students' learning experiences and academic performances (Finn & Zimmer 2012, 99).

The following gives an overview of: various definitions; models; analytical methods and previous works of student engagement.

2.1 Definitions of Student Engagement

Researchers either define engagement broadly or specifically. The former includes everything related to students, while the latter makes engagement less effective for policy making. Therefore, a well-defined definition is needed to measure engagement and study its relation to other constructs effectively (Eccles & Wang 2012, 137).

2.1.1 Student Engagement as a Multidimensional Construct

The inconsistency in defining engagement is due to its multidimensional construct. Appleton, Christenson and Furlong (2008, 370) identified three primary models of student engagement: Two-component model consisting of behavioural and emotional/affective engagement; three-component model including cognitive, behavioural and emotional/affective engagement; four-component model comprising of academic, behavioural, cognitive and psychological engagement (TABLE 1). Parsons and Taylor

(2011, 8) reported five most common categories of student engagement - cognitive; behavioral; affective; academic and social but noted other categories.

In addition, Finn, Pannozzo and Achilles (2003, 323) emphasized the difference between academic and social engagement. Specifically, academic engagement is behaviour related to the learning process while social engagement is pro-social and antisocial behaviour with teachers and peers.

Moreover, whether the concepts of engagement and disengagement describe the same phenomenon but from different ends of the continuum have been discussed. For example, Skinner and Pitzer (2012, 22) defined engagement as inclusion of disengagement, alienation, disaffection and burnout but added that some view disengagement as the absence of engagement. Reschly and Christenson (2012, 13-16) suggested that low engagement is different from disengagement and that engagement and disengagement are separate construct. These denote that narrower and clearer differentiations of student engagement are needed.

The difference between indicators, facilitators and potential outcomes has been discussed for more than a decade (Skinner and Pitzer 2012, 26). Indicators are expressed as behavioural, affective, cognitive and observable interactions in school activities. Separately, facilitators (personal and social) are factors that affect engagement. Personal facilitators include student's self-efficacy and sense of belonging to school, while social facilitators are relationships formed (Skinner & Pitzer 2012, 26). Absence of indicators reflects the lack of facilitators in supporting engagement. Therefore, facilitators are essential in engaging students. Finally, potential outcome such as academic achievement is attained due to engagement (FIGURE 2). However, besides engagement, inadequate abilities or lack of instructions and support also affects potential outcome (Finn 1989, 3). For instance, Newmann (1992, 16) failed to determine a significant quantitative relationship between students' achievement and engagement. Furthermore, academically good students may be disengaged (Zyngier 2008, 1770).

In summary, while different dimensions exist, engagement includes at least participatory behaviour and affective component (Reschly and Christenson 2012, 11).

TABLE 1 MODELS OF STUDENT ENGAGEMENT (Adapted from Reschly & Christenson 2012, 12)

Models	Indicators
Two-component model Finn, 1989	<p>Participation Respond to requirements Class-related initiative Extracurricular activities Decision-making</p> <p>Identification Belonging Valuing</p>
Three-component model Fredericks et al., 2004;	<p>Cognitive The thinking involved during learning and completion of tasks, including non-academic related tasks</p> <p>Behavioural Participation of students in school and extra-curricular activities</p> <p>Emotional/Affective Sense of belonging to school Relationship with teachers and peers</p>
This work	
Four-component model Reschly & Christenson, 2006	<p>Academic Time on task, credit accrual, homework completion</p> <p>Behavioral Attendance, participation, preparation for class/school</p> <p>Cognitive Value/relevance, self-regulation, goal setting</p> <p>Affective Belonging, identification with school</p>
Four-component model (2 Engagement, 2 Disaffection) Skinner et al., 2008kn	<p>Behavioral engagement Action initiation, effort, persistence, intensity, attention, absorption, involvement</p> <p>Behavioral disaffection Passivity, giving up, withdrawal, inattentive, unprepared, distracted, mentally disengaged</p> <p>Emotional engagement Enthusiasm, interest, enjoyment, satisfaction, pride, vitality, zest</p> <p>Emotional disaffection Boredom, disinterest, frustration, sadness, worry/anxiety, shame, self-blame</p>

2.1.2 Student Engagement as a Multilevel Construct

In addition to student engagement being a multidimensional construct with no consensus on the numbers and types of classifications, some researchers argued that student engagement is hierarchical, where the importance between dimensions varies. For instance, Reschly and Christenson (2012, 16) proposed that affective and cognitive engagement influences behavioural engagement (thus hierarchical). Therefore, it is essential to determine how each aspect of student engagement correlates with one another.

There are four contexts in which engagement takes place. Community, the first and broadest context, involved family, school, and religion. This is largely associated to behavioural and affective engagement, a prerequisite to cognitive engagement. Subsequently, this funnels down to school activities (2nd context), classroom engagement (3rd context) and learning activities (4th context) (Skinner & Pitzer 2012, 22). Behavioural engagement might predict school dropout and highest level of engagement is demonstrated when students participate in activities with positive attitude (Archambault, Janosz, Fallu & Pagani 2009, 666).

2.1.3 Alternative Views on Student Engagement

Definitions of engagement may differ between schools and students, resulting in a mismatch of interest and outcome. This leads to personal problems and inability to develop students' potential (Zyngier 2008, 1767). Students may gradually alienate themselves from school and eventually drop out. Similarly, Archambault et al. (2009, 409) indicated that "student engagement is accessed as a general experience, with little or no consideration for group and individual differences". Therefore, engagement should revolve around the questions: for whom, in what and for what to account for individual students' needs (Zyngier 2008, 1767). Although dropout is brought about by disengagement, Schlechty (2002) also stated that engaged students may dropout consciously (Zyngier 2008, 1770).

2.2 Behavioural Engagement

Participation-identification model describes behavioural component as participation and psychological component as identification (Finn 1993, 6). Participation includes attendance, responding to the teachers, answering questions and doing assignments. Problematic behaviours such as truancy and disruptive behaviour lead to poor academic performance and eventually dropout (Finn 1989, 118).

Participation changes as students advance in levels. Participation can be categorized into four levels: attending, preparing and responding to questions raised by teachers; taking the initiative to ask questions and converse with teacher, showing interest in their academic work by doing more than expected or spending more time in the class; participating in social activities such as extracurricular activities; setting academic goals and making decisions such as changing the school (Finn 1993, 6-7). Likewise, Mahatmya, Lohman, Matjasko and Farb (2012, 47) also summarized three definitions of behavioural engagement: positive behaviour; observable participation in academic and non-academic school activities.

Attendance of extracurricular activities is an indicator of behavioural engagement and students who drop out of school participate less in extracurricular activities than their counterparts (Finn 1993, 10). Structured extracurricular activities in school improve academic performance, reduce dropout and delinquency rates (Mahoney & Cairns 1997, 241; Gilman, Meyers & Perez 2004, 31; Feldman & Matjasko 2005, 193). Participating in extracurricular activities is an indicator of behavioural engagement and had positive impact on learning outcome.

On the contrary, failing to participate results in nonparticipation and inattentive and withdrawn students had lower achievement than disruptive students (Finn 1993, 7-8). As students grow older, they have more autonomy over their attendance in school and so, school attendance is likely to deteriorate over the years, resulting in eventual dropping out of school (Finn 1993, 10). Consequently, student engagement is challenging in middle schools and especially students from low socioeconomic status whose

behavioural engagement decreased significantly at twelve years old had the highest risk to dropout (Zyngier 2008, 1766; Archambault et al. 2009, 413).

Additionally, there is strong relationship between participation and sense of belonging (Willms 2003, 29). Therefore, emotional engagement is also significant in student engagement and behavioural engagement is “a predictor of changes in emotional engagement”, implying that affective engagement is required for behavioural engagement (Skinner, Furrer, Marchand & Kindermann 2008, 772).

2.3 Affective Engagement

Affective engagement determines student’s responses to school environment and willingness to participate in school activities (Mahatmya, Lohman, Matjasko & Farb 2012, 47). It influences behavioural and cognitive engagement (Finn & Zimmer 2012, 103).

Identification, the psychological dimension in Finn’s participation-identification model, highlighted the importance of a student’s bond with school. Students who see themselves as part of the school view schooling as an important experience and hold school-related goals in high regards. Without the bond, students would not exhibit behavioural engagement.

High acceptance by teachers and peers leads to enthusiasm and enjoyment in school (Osterman 2000, 331). Facilitators of student’s affective engagement include relationship with their teachers and peers (Mahatmya et al. 2012, 54). Good relationships increase support in school and develop social skills. Student’s home environment, self-efficacy, teacher’s expectations, school environment and policies are some other factors that influence student’s motivation (Lumsden 1994, 3).

Students’ emotions include belonging, relatedness, acceptance, membership and sense of community (Osterman 2000, 326). Failing to achieve academic success, experiencing school normlessness and facing isolation are reasons for dropping out (Elliott & Voss, 1974). Of these reasons, school normlessness, the “dislike of school and non-

conformity to accepted school norms” was most crucial and “similar to disengagement” (Osterman 2000, 338).

Similarly, learned helplessness occurs when one discovers repeatedly that outcomes of situations are out of one’s control. Learned helplessness results in three negative consequences: unmotivated to try after some time, leading to disengagement; lack of cognitive engagement as one fails to acquire and use strategies required for future success; having “the feeling of depression that accompanies powerless”, amplifying disengagement (Finn 1993, 18).

Students’ belonging is essential for all students (Osterman 2000, 343-344). However, it differs among students of different age and gender. Sense of belonging has the greatest impact on middle school students, especially boys. Teacher support influences student engagement while peer acceptance affects student behaviour. Generally, students with a sense of belonging to school are more motivated and willing to follow school regulations and values. This positive attitude leads to deeper affection which may translate into engagement.

When asked about what they enjoyed in school, most students spoke about their social life, especially friends (Newmann 1992, 15), indicating that affective engagement may be the most important aspect of engagement. However, sense of belonging is subjective and there is inadequacy in understanding the sense of belonging of individual student as friendship and popularity differ from peer acceptance, and thus, may not be enough to reduce the impact of rejection in school. As such, emotional engagement is affected by the quality of friendship (Osterman 2000, 344).

Students with academic identification holds academic achievement in high regards and are motivated to achieve academic success (Osborne, Walker & Rausch 2002, 3-5). However, it is uncertain whether academic identification always leads to academic success as academic identification “might increase the chances of poor academic outcomes or withdrawal”. Negative stereotypes of academic achievements of certain groups of students can result in anxiety which prohibits cognitive development and leads to withdrawal. However, such situation might only be limited to “students of col-

our who are identified with academics”. Disidentification could also be self-protection for students to distance themselves away from anxiety and unpleasant academic environment (Osborne et al. 2002, 5).

Smaller class size improved students’ social and academic behaviour in elementary schools due to higher cohesion (Finn et al. 2003, 351). Students are more likely to influence and engage one another with goals in line with teachers and school. Furthermore, smaller classes enhanced student-teacher relationships. Although smaller classes increase engagement, other factors need to be examined.

Students with caring and reasonable teachers who can teach in a well-structured manner are more likely to attend school and perform better academically (Klem & Connell 2004, 262). Students whose parents are positively involved in their learning are also more motivated and engaged in school (Gonzalez-DeHass, Willems & Holbein 2005, 109). Undoubtedly, emotional engagement is influenced by peers, parents, as well as teachers.

2.4 Cognitive Engagement

Many researchers defined cognitive engagement as “the thinking that students do while engaged in academic learning tasks” (Helme & Clarke 2001, 135). Cognitive engagement was identified as the willingness to put in the effort to gain knowledge and skills (Mahatmya et al. 2012, 47) and is often demonstrated in learning tasks (Walker, Greene & Mansell 2006, 4). These definitions revealed that cognitive engagement is displayed in learning tasks and impacts students’ academic achievements.

Meaningful processing means associating new information to one’s current knowledge, while shallow processing as rote memorization of new information without association to one’s existing knowledge. Despite being a less desirable form of learning, rote memorization is nevertheless learning that may lead to academic achievements. Students’ intrinsic motivation, self-efficacy and academic goals are directly related to meaningful cognitive engagement while extrinsic motivation is associated with shallow cognitive engagement (Walker et al. 2006, 4-9).

The types of achievement goals affect students' cognitive engagement (DeBacker & Crowson 2006, 536). While students with mastery goals seek self-development and task mastery, students with performance goals are driven by grades and sense of self-esteem in grades comparison. Performance goals may result in students avoiding tasks they perceive unable to do well in so as to protect their self-esteem.

Writing tasks with specific goals relevant to students' lives and having real audience increased engagement, particularly for low achievers. While engagement increased when students see the value of tasks, criticism from publicized work impeded the performances of high achievers. Despite having the same concern, low achievers have more positive attitude towards criticism. This could mean that high achievers seek performance goals which may hinder them being cognitively engaged (Lo & Hyland 2007, 229-232).

Silent students had mixed abilities and avoid risks. These students choose not to participate and view in-class interactions as "an opportunity to listen, to think, and to learn from others". While it may seem that these students are disengaged in class behaviourally, they are engaged cognitively as being silent is their learning strategy (Jones & Gerig 1994, 172).

Factors impacting cognitive engagement in mathematical tasks include: (1) students' prior knowledge, (2) scaffolding, (3) time given to students, (4) modelling high-level performance and (5) constantly seeking explanation from student. Teachers play a major role in the cognitive engagement of students, indicating the importance of teacher-student relationship (Henningsen & Stein 1997, 534). Clearly, affective and cognitive developments are interlinked and influence each other (Entwisle & Alexander 1988, 450).

Videotapes and interviews of middle school students exploring the relationship between learning and cognitive engagement, which is "the deliberate task-specific thinking that a student undertakes while participating in a classroom activity", was unable to determine the relationship between cognitive engagement and learning. The in-

Investigation of cognitive engagement in different classroom settings showed that cognitive engagement in student-student interactions is higher than teacher-student interactions. Additionally, characteristics of task and individual students affect cognitive engagement (Helme & Clarke 2001, 151).

Regardless of the type of goals and cognitive engagement, the evidence presented in this section suggests that cognitive engagement is mainly related to students' inner self. However, cognitive engagement is also dependent on the social and environment context. Due to the presence of many facilitators, more in-depth information is required as to how each facilitator affects cognitive engagement.

2.5 Measuring Student Engagement

There are a total of twenty-one instruments (Fredricks, McColskey, Meli, Mordica, Montrosse & Mooney 2011, 1) measuring student engagement from upper elementary school to high school. Of these twenty-one instruments, there are fourteen student self-reports, three teacher reports and four observational measures (Fredricks et al. 2011, 4). Clearly, self-report measures are most commonly used in accessing engagement (Fredricks & McColskey 2012, 768).

These instruments serve different purposes; research on motivation and cognition, research on dropping out, evaluation of interventions, monitoring at the teacher, school, or district level and diagnosis and monitoring at the student level (Fredricks et al. 2011, 15-16). While majority of the instruments measure general engagement in school or in class, there are a couple of instruments that measure subject specific engagement such as Mathematics and reading (Fredricks et al. 2011, 17).

Unlike student self-reports, teacher reports are rating given from teacher's perspective and thus, require teachers to have sufficient understanding of their students. Observational measures are direct observation of students in specific contexts. When using observational measures, trained observers are required to "collect the data accurately and as intended by the instrument developer" (Fredricks et al. 2011, 5).

2.6 Findings on Student Engagement

Studies were done to compare student engagement of different demographic groups such as special needs students, ethnicity, social economic status and nationality.

2.6.1 General Findings

Comparison of students with learning disabilities (LD) and emotional or behavioural disorders (EBD) and students without disabilities found that students with slight disabilities were more inclined to have behavioural problems. In addition, behavioural engagement was the key to staying in school for all students. Primarily, students with behavioural, emotional and serious learning problems have high possibility of dropping out (Reschly & Christenson 2006, 283-289).

Observation in English class revealed that students of low socio-economic status were less vocal. However, non-vocal students may still be engaged by completing tasks and homework. Instead of race and social class, the initial level of student achievement is a better predictor of behavioural engagement. Students who are poorer in reading and writing are less vocal and put in less effort in class activities (Kelly 2008, 434-446).

European-American and African-American middle school students had minor cognitive difference between them. European-American students had lower affective but higher behavioural engagement than their counterparts. Gender analysis indicated that cognitive engagement of girls and boys were similar, but girls were more engaged behaviourally and emotionally. It could be that gender, rather than racial differences have more impact on engagement (Wang, Willett & Eccles 2011, 475).

Comparison of cognitive and emotional engagement between native students and immigrant students in forty-one countries found emotional engagement, student's sense of belonging at school, and cognitive engagement, attitude towards school, to be distinct but weakly related constructs. More importantly, the study showed that first generation immigrants were more cognitively engaged than second generation immigrants and native students, with native students having the lowest cognitive engagement. Emotional engagement, however, was highest for native students and lowest for first generation

immigrants. Additionally, native students had the highest academic achievement while first generation immigrants had the lowest. It was concluded that being cognitively engaged is insufficient for affective engagement and better academic results (Chiu, Pong, Mori & Chow 2012, 8-12).

2.6.2 Findings in Singapore

Observations and interviews showed Virtual Learning Environment (VLE) increased engagement of underachieving primary pupils and curiosity being “a strong motivational factor for student engagement”. However, as VLE is new to the students, it is unknown if interest and engagement is sustainable. In addition, the small sample size prevents generalization of the results (Ang & Wang 2006, 9-12). Thus, longitudinal studies should be conducted to examine the impact of VLE on engagement over time. Similarly, team-based learning was more enjoyable and engaging than traditional classes for medical undergraduates (Tai & Koh 2008, 1021).

Survey of teachers on their efficacy on instructional strategies, classroom management and student engagement showed more experienced teachers have higher efficacy in engaging low achieving students. While teachers’ age relates to teaching experience, it does not impact engagement. However, teachers’ age and experience are negatively related to teachers’ support (Yeo, Ang, Chong, Huan & Quek 2008, 201). This indicated that while more experienced teachers engage students cognitively, they are unable to do so emotionally.

Examination of the change in cognitive engagement of polytechnic students in a one-day problem-based learning class showed that the more knowledgeable the students, the higher their autonomy, and cognitive engagement, proving that lesson structure and planning is important for cognitive engagement (Rotgans & Schmidt 2011, 476).

The relevancy and value of task affected engagement. Study on secondary students found that those who doubted the relevancy of project work were less likely to participate in meetings and discussions. Understanding the importance of task, teaching the required skills and having organizational support would enhance students’ participa-

tion and learning outcomes (Koh, Tan, Wang, Ee & Liu 2007, 96-98). For instance, the use of exploratory talk in project work might enhance task engagement. Sharing and articulating of knowledge would improve reasoning skills, resulting in active participation and discussion (Koh, Wang, Tan, Liu & Ee 2008, 7). Furthermore, focusing on enhancing students' learning experience in project work would be more beneficial than emphasising on the grades as mastery goals were more likely to be pursued (Wang, Liu, Koh, Tan & Ee 2011, 61).

Several schools had conducted research with PEI, which is part of the PETALS Framework developed by the Ministry of Education on engaged learning in class. In this framework, behavioural, affective and cognitive engagements are influenced by five aspects of learning: **P**edagogy, **E**xperience of learning, **T**one of environment, **A**ssessment and **L**earning Content. Behavioural engagement is demonstrated by conduct and participation, and adhering to classroom norms. Affective engagement is manifested through intrinsic motivation, sense of belonging, sense of self and autonomy and deep immersion in task. Cognitive engagement is exhibited through preference for challenge and desire to go beyond requirements (The PETALS™ Primer 2007, 42-46).

PEI measuring the five PETALS dimensions and engagement in a primary maths class showed intervention having high impact on learning content and affective engagement. Additionally, longer intervention led to higher achievements (Yong & Othman 2011, 10-11). In a quasi-experimental study done in two primary four classes, engagement was assessed before and after a six-week intervention in Mathematics using PEI. Although overall engagement improved due to an increase in behavioural engagement, cognitive engagement decreased slightly while negligible changes were found for affective engagement (Hong, Lee & Yeo 2012, 4454).

Investigation of the impact of inquiry-based learning on the five dimensions of PETALS framework and three dimensions of engagement showed that inquiry-based learning created a safe tone of environment which allowed students to participate in the learning activities, leading to higher academic achievements (Koo & Loke, 4).

A study circle in primary English classes increases primary pupils' behavioural engagement. The dimensions of engagement measured by PEI had Cronbach's alpha of 0.87 to 0.91, with overall engagement having a Cronbach's alpha of 0.95, which demonstrated its high validity (Lai, James, Mohammad, Teo & Tok, 6-8).

3 SCHOOL BURNOUT

Burnout was initially confined to the service industry. However, it now includes all types of professions, even students, as attending school is also ‘work’, making schools “workplaces for students” and “context in which students work” (Lee, Puig, Kim, Shin, Lee & Lee 2010, 405; Osterman 2000, 326; Salmela-Aro, Kiuru & Nurmi 2008, 664). Student burnout is a three dimensional construct that includes the feeling of exhaustion due to studies demands, having pessimistic and isolated attitude towards studies and feeling inadequate being a student (Schaufeli, Martínez, Pinto, Salanova & Bakker 2002, 464).

Burnout occurs as a result of a large mismatch between the job nature and person doing the job (Yang 2004, 287). Hence, school burnout is the mismatch between school and student. This mismatch results in school burnout being a “continuous phenomenon” that occurs due to school-related strain (Salmela-Aro et al. 2008, 2). This chapter gives an overview of: importance; views; analytical methods and previous works of burnout.

3.1 Importance of School Burnout

School burnout leads to undesired outcome such as absenteeism, health issues, depression (Kiuru, Aunola, Nurmi, Leskinen & Salmela-Aro 2008, 25), poor academic achievement (Schaufeli et al. 2002, 465; Salmela-Aro et al. 2008, 2) and even school dropout (Yang 2004, 287). Therefore, identifying causes of student burnout is essential in prevention and improving its treatment (Jacobs & Dodd 2003, 291). Students who dislike schools tend to have behavioural problems, psychological problems, lower quality of life (Kiuru et al. 2008, 24) and experience burnout. Thus, school is important in regulating student burnout.

Adolescents have cognitive, emotional, social needs and goals that change as they grow (Eccles & Wang 1991, 523). Catering to their needs is necessary if schools want to motivate students. Failing to do so will result in disengaged students. Salmela-Aro et al. (2008, 2) supported this view by proving that Finnish comprehensive and upper sec-

ondary students experienced burnout in negative school climate. The lack of school support and healthcare system increases the possibility of burnout while encouraging students, showing interest in them and treating them fairly prevents school burnout.

Henceforth, school burnout can help schools increase their awareness of students' well-being (Kiuru et al. 2008, 25). Actions can then be taken to make adjustments and narrow mismatch.

3.1.1 Burnout and Engagement

Student burnout is the opposite of student engagement. While students who experience burnout feels exhausted, pessimistic and inadequate, engaged students are vigorous, dedicated and focused. Vigorous is defined by being energetic, having the resilience and willingness to put effort in the work. Dedication is shown by one being enthusiastic and taking pride in the work. Being happy with the job makes one focused when working (Schaufeli et al. 2002, 465; Schaufeli & Bakker 2004, 293; Uludağ & Yaratana 2010, 15).

While emotional exhaustion and cynicism are perceived as the core dimensions of burnout, vigour and dedication are essential dimensions in engagement. The relationship between burnout and engagement and found that vigour is the antipode of emotional exhaustion while dedication is the antipode of cynicism. The relationships between vigour and exhaustion, and dedication and cynicism were interpreted as continuum and were labelled "energy" and "identification" respectively (González-Romá, Schaufeli, Bakker & Lloret 2006, 166; Hakanen, Bakker, & Schaufeli 2006, 498).

While burnout and engagement were negatively correlated, burnout and workaholism were positively correlated. Spending a lot of time on work and constantly thinking about work are two characteristics that reflect the "behavioural and cognitive component of workaholism". Specifically, two types of workaholism, "work enthusiasts" and "disenchanted workers" have characteristics similar to that of engagement and burnout respectively. The former is undriven, yet involve in and enjoy their work. The

latter is driven, but not enjoying their work and also uninvolved (Schaufeli, Taris & Van Rhenen 2008, 174-193).

Study on the impact of exhaustion on vigour and cynicism on dedication showed that older tourism students are more burnout than their younger counterpart. It could be that older students “find it more difficult to deal with the causes of burnout.” Furthermore, female students are more engaged and less burnout than male students who are less capable of coping with emotions (Uludağ & Yaratan 2010, 14-18).

Survey of medical students found personal accomplishment related to contemplation of dropping out. Burnout caused one to have the idea of dropping out; increases the risk of dropping out and is strongly linked to drop out. However, this study failed to affirm the casual relationship between burnout and considerations to dropout. As such, more research is required to determine the relationship between burnout and contemplating to drop out (Dyrbye, Thomas, Power, Durning, Moutier, Massie & Shanafelt 2010, 99).

Burnout and engagement are influenced by six aspects of work life, namely workload, control, rewards, community, fairness and values. It is important to prevent burnout before it turns into a problem. The best way to avoid burnout is to increase engagement. To do so, factors that increase engagement have to be taken into consideration. Interventions at the organizational level are more impactful and beneficial than those at individual level (Maslach & Jackson 2011, 44-45).

3.1.2 Burnout and Stress

Stress is an important component of burnout (Jacobs & Dodd 2003, 293) and often studied together. However, stress may not lead to burnout. Study on Israeli policemen verified that stress resulted in strain rather than burnout while work importance was associated with burnout rather than strain. Burnout was also related to negative emotions such as inadequate job satisfaction and contemplating to resign (Pines & Keinan 2005, 631). In the context of student burnout, it would mean that burnout is linked to the importance of studies as perceived by a student. Students unsatisfied with

their academic performance are more likely to experience burnout and consider dropping out of school.

Differentiating between stress and burnout enables school to provide better intervention and treatment. As burnout has a higher correlation with work importance, burnout prevention should focus on reinforcing the importance of work, meaning schools ought to emphasize studies and involvement in school (Pines & Keinan 2005, 631).

Burnout of Turkish undergraduates was related to social support, student's perfectionism and stress. Lack of social support caused exhaustion while stress caused exhaustion and cynicism (Çam, Deni & Kurnaz 2014, 319).

Together, these studies outline that school is crucial in preventing burnout. Schools ought to communicate the importance of studies to students, and also care about their emotional well-being.

3.2 Findings on School Burnout

Maslach Burnout Inventory (MBI) is commonly used to measure burnout of service workers (Maslach & Jackson 1981, 112; Aguayo, Pecino, de la Fuente Solana & Fernández 2011, 344). MBI has several versions such as MBI- Human Services Survey for health professionals, MBI-Educators' Survey for educators and MBI-General Survey for various professions (Aguayo et al. 2011, 344). The MBI has also been modified for use in other contexts (Schaufeli et al. 2002, 467). School Burnout Inventory (SBI) was developed to measure school burnout (Salmela-Aro Kiuru, Leskinen & Nurmi 2009, 49). Recently, Burnout Clinical subtype was validated to measure burnout of professionals who work in frenetic environment (Montero-Marin 2010, 2).

Bergen Burnout Indicator is also used to measure burnout. The BBI-15 has 15 items, three dimensions; work exhaustion, cynicism towards work and sense of inadequacy at work (Salmela-Aro et al. 2009, 50). The School Burnout Inventory originated from Bergen Burnout Indicator 15 (BBI-15) and was developed to measure burnout of Finnish university students (Kuittinen & Meriläinen 2011, 49).

Increased self-efficacy and high level of social support decreased burnout of management information system students in technical-vocational college. Femininity, rather than gender, was a better indicator of burnout. Social support might help students cope with burnout while femininity enabled students to let-off their negative emotions, which resulted in lower burnout level (Yang & Farn 2005, 929). Similarly, increased school support of 8th and 9th grades comprehensive Finnish students decreased burnout. Additionally, teachers' motivation also decreased burnout in 1st and 2nd grades of Finnish upper secondary students. Girls with lower academic achievements in comprehensive schools are also found to experience more burnout (Salmela-Aro, Kiuru, Pietikäinen & Jokela 2008, 9).

Investigation on the relationship between perceived social support and burnout of grades 9-12 Turkish high school students with MBI-Student Survey found low burnout when students' perceived high social support and increase in burnout as students advanced academically. Additionally, students with high academic achievements experienced less burnout (Kutsal & Bilge 2012, 283-284). Another study of 12th grade high school students in Turkey found burnout negatively related to life satisfaction while work engagement was positively related to life satisfaction. Among cynicism, efficacy and exhaustion, life satisfaction had the most impact on efficacy (Çapri, Gündüz & Akbay 2013, 38-41).

4 STUDENT ENGAGEMENT AND SCHOOL BURNOUT IN CONCEPTUAL STAGE OF CURRENT STUDY

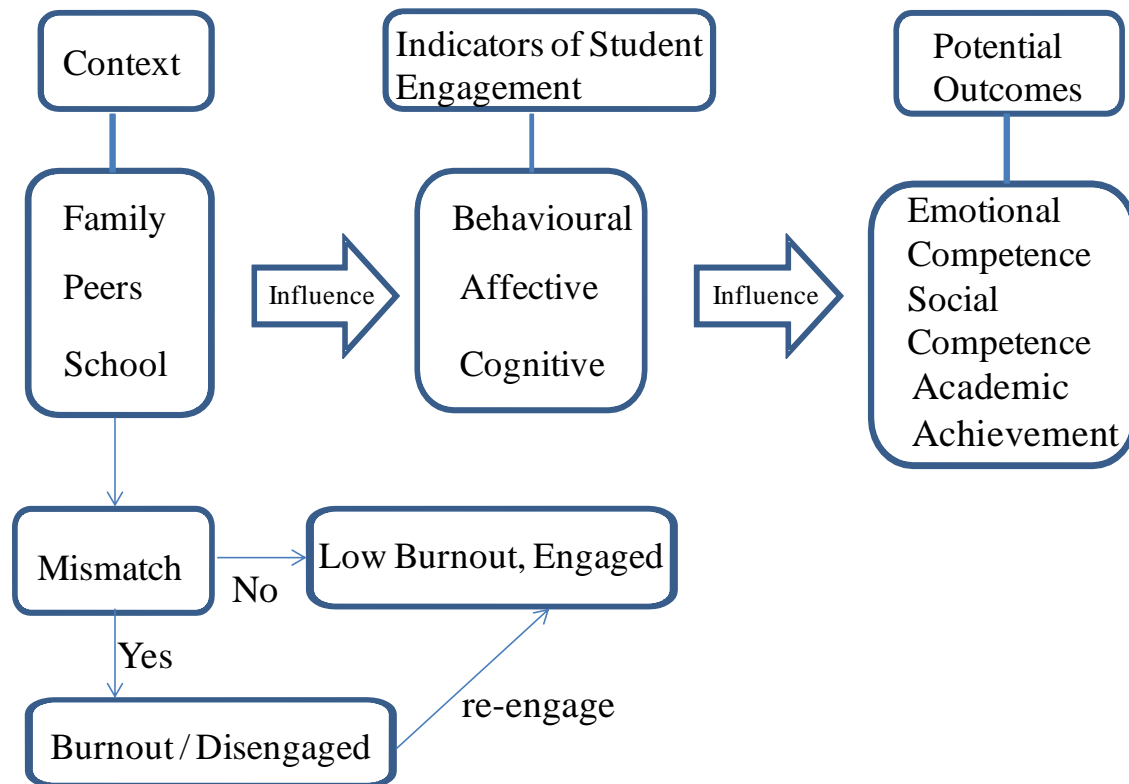


FIGURE 2 THEORETICAL FRAMEWORK

The theoretical framework used in this study is shown in FIGURE 2. As illustrated, student engagement is affected by the context and has impact on the learning outcome. A mismatch between the context and student may result in burnout, implying that engagement is negatively related to burnout.

The contextual environment and learning outcomes were beyond the scope of this study as the main purpose of this study is to investigate student engagement and its relation to burnout in Singapore, using Student Engagement Instrument (SEI) and School Burnout Inventory (SBI).

5 RESEARCH QUESTIONS

Student engagement is an important construct that helps prevent dropout and enhance potential outcome. Moreover, it could be used to reduce the mismatch between students and the school. For these reasons, understanding student engagement is beneficial for both students and schools.

The main aim of this study is to investigate student engagement of secondary students in Singapore. Additionally, this study builds on previous studies, giving insights to engagement and its relation to burnout.

The following research questions were set:

1. How engaged and burned-out are secondary students in two Singaporean secondary schools?
2. How does engagement and burnout of secondary students in Singapore differ among various groups such as; grades, streams, gender, academic achievements and family background?
3. How are student engagement and burnout related?

6 METHODOLOGY

This quantitative study was carried out in two secondary schools in Singapore and was conducted in collaboration with National Institute of Education (NIE) in Singapore. This study involved the examination of student engagement across various groups, such as gender, grades, streams, ethnicity, academic achievements and family background.

A student self-report survey is a commonly used method in measuring student engagement to collect data from students' perspectives. Affective and cognitive engagement are also measured more accurately using student self-report rather than methods like observation, which is subjective when interpreting affective and cognitive engagement (Fredricks & McColskey 2012, 765).

However, there are certain drawbacks associated with self-reported survey. Firstly, it is unknown if the students are honest when completing the survey, resulting in inaccurate reflection of their level of engagement. Secondly, most items in self-reported surveys are general and do not reflect engagement in specific circumstances (Fredricks & McColskey 2012, 765).

6.1 Procedure and Participants

Prior to the study, permission was obtained from the Ministry of Education in Singapore. A pilot study with 3 participants was also conducted to ensure that the survey questions were clear and the survey could be accessed and completed without any difficulties. The pilot study was conducted approximately two weeks before the actual data collection commenced.

School principals were then approached and all documents were sent to them via email. The documents included an approval letter from the Ministry of Education, letter to principal, instructions to principal, instructions to the survey supervisor and parent's consent form. Additional information pertaining to the school population and class sizes were also collected.

A consent form was sent to all parents of students participating in the survey. Both parents and participants were informed that the identity of the participants were anonymous. Parents indicated if they allow or do not allow their child to participate in the survey. Regardless of the decision, the consent form was returned. Parents who disallowed their child to participate in the study also provided the reasons for their decisions.

After collecting the consent form, the participants who submitted parental consent agreeing to participate in the survey completed an anonymous electronic survey form. The survey consists of questions pertaining to students' background, their self-reported academic results, the Student Engagement Instrument (SEI) and Student Burnout Inventory (SBI). Both SEI and SBI are cross-sectional surveys that assess the student engagement and burnout level respectively.

The two secondary schools surveyed are co-ed representative neighbourhood schools. A random sample of secondary 2 and 3 students were surveyed. A class from each level and each stream were selected as instructed by the researchers.

TABLE 2 INFORMATION OF SCHOOLS AND PARTICIPANTS

Sch	Level	Total no. of students	No. of student approached	No. of students completed the survey (N)	Percentage %
1	Sec 2 N(T)	38	38	30	79.0
	Sec 2 N(A)	80	40	33	82.5
	Sec 2 EXP	159	39	28	71.8
	Sec 3 N(T)	29	29	21	72.4
	Sec 3 N(A)	87	39	36	92.3
	Sec 3 EXP	121	38	35	92.1
	Sec 2N(T)	78	24	23	95.8
2	Sec 2 N(A)	118	39	36	92.3
	Sec 2 EXP	35	35	34	97.1
	Sec 3 N(T)	62	30	24	80.0
	Sec 3 N(A)	147	35	31	88.6
	Sec 3 EXP	61	27	24	88.9
		1015	413 (40.7%)	355	86.1

Note: School 1 conducted the survey as part of students' e-learning activity at home while school 2 conducted the survey in the school computer lab, in the presence of a survey supervisor. Participation rate in School 1 and 2 was 82.1% and 90.5% respectively.

6.2 Instruments

6.2.1 Student Engagement Instrument

The instrument used in this study to measure student engagement, the SEI, is a self-report instrument that is validated by Appleton, Christenson, Kim and Reschly (2006, 427). It is developed for the purpose of intervention and preventing dropout (Fredricks & McColskey 2012, 773) and is designed to measure cognitive and affective engagement (Appleton et al. 2006, 427).

As Appleton et al. (2006, 432) described:

The Student Engagement Instrument (SEI) attempts to measure a more generalized sense of engagement with school and was developed particularly for middle and high school. The six-factor version of the SEI contained 35 items, with the sixth factor “extrinsic motivation” comprising of only two items. All items were scored via a four-point Likert-type rating (1=strongly agree, 2=agree, 3=disagree, and 4=strongly disagree). All items were coded (and reversed items were recoded) so that higher scores indicated higher levels of engagement.

In a comparative study that analyzed various methods and student self-report instruments on measuring student engagement, Fredricks and McColskey (2012, 775) reported that SEI was proved to be valid and reliable, with Cronbach’s alpha .72-.92 and test-retest interrater .60-.62.

The six-factor model SEI consists of student–teacher relationships, control and relevance of school work, peer support for learning, future aspirations and goals, family support for learning and extrinsic motivation (Appleton et al. 2006, 437). However, as extrinsic motivation has only two items, and both are phrased negatively, omission of the sixth factor is proposed (Appleton 2012, 740). Recent research has also shown that five-factor model is valid in measuring student engagement and extrinsic motivation is dropped as a factor (Fredricks & McColskey 2012, 776). Therefore, the five-factor model SEI was used in this study to measure student engagement. Due to the removal of two items from the six-factor model SEI, thirty-three items were left for the five-factor model and the numbering of the items was changed accordingly.

TABLE 3 5-FACTOR SEI

Factors	Items No.	No. of items
Student–teacher relationships	3, 5, 10, 13, 16, 20, 21, 26, 30	9
Control and relevance of school work	2, 9, 15, 24, 25, 27, 31, 33	8
Peer support for learning	4, 6, 7, 14, 22, 23	6
Future aspirations and goals	8, 11, 17, 18, 29, 32	6
Family support for learning	1, 12, 19, 28	4

6.2.2 School Burnout Inventory

The School Burnout Inventory (SBI) is a self-report instrument that was developed by Salmela-Aro et al. (2009, 49). As summarized:

The SBI consists of three factors, exhaustion at school, cynicism at school and inadequacy at school. The SBI consists of nine items measuring the three factors of school burnout and all the items were rated on a 6-point Likert-type scale ranging from 1 (completely disagree) to 6 (strongly agree) (50).

The validity and reliability of the instrument was conducted on Finnish upper secondary high schools and vocational schools. SBI was proved to be valid and reliable, with Cronbach's alpha .67-.80 and item reliability .43-.77.

TABLE 4 FACTORS OF SBI

Factors	Items No.	No. of items
Exhaustion at school	1, 4, 7, 9	4
Cynicism at school	2, 5, 6	3
Inadequacy at school	3, 8	2

6.3 Ethical issues

Permission was obtained from the Ministry of Education in Singapore and a consent form was sent to all parents of students participating in the survey. Students whose parents opted out did not take part in the survey. All the data collected was anonymous and students' official academic results were not requested from schools. Although one of the schools conducted the survey as part of their e-learning activity, students were neither graded for their participation in the survey nor penalized for failing to do so. The data collected could only be accessed by the researchers and were archived in the university's system.

6.4 Data analysis

The data collected was saved as an SPSS file from the University's online platform and analysed using SPSS version 20. The missing data were first dealt with and the validity and reliability of both SEI and SBI were then tested. Principal axis factoring was performed and factors of the SEI and SBI were later formed according to the Rotated Factor Matrix obtained.

To answer the first research question, means for burnout, affective, cognitive and overall engagement were calculated and computed. Affective engagement was computed by adding items in the three subscales: student–teacher relationships, peer support for learning and family support for learning. Cognitive engagement was computed using items from: future aspirations and goals, conforming to instructions and perceived success. Subsequently, students were categorized into three groups for engagement and two groups for burnout. Those with engagement lower than one standard deviation from the median were categorized as low engaged, while students with engagement above one standard deviation were identified as high engaged. The third group within one standard deviation were average engaged. For burnout, students above one standard deviation from the median were classified as high burnout. These subgroups were then compared to further understand engagement and burnout. The relationship between affective and cognitive engagement was also explored.

Independent t-tests, one-way ANOVA tests and non-parametric tests were run to understand how engagement and burnout differed among students of various groups. Relationships between variables were also tested using Chi-square tests of independence. Correlation between SEI and SBI was examined using Pearson product-moment correlation coefficient.

The data collected from 335 participants was used in this study. Of these 335 participants, 174 students were from school 1 and 154 students from school 2. The remaining students did not indicate their school. A further breakdown of the profile of these 335 participants is shown in TABLE 5.

TABLE 5 STATISTICAL PROFILE OF PARTICIPANTS

Independent Variables		No. of students	Percentage
Gender	Girls	147	43.9
	Boys	176	52.5
	Unknown	12	3.6
Grade	Secondary 2	160	47.8
	Secondary 3	166	49.6
	Unknown	9	2.7
Stream	NT	75	22.4
	NA	112	33.4
	EXP	138	41.2
	Unknown	10	3.0
Race	Chinese	206	61.5
	Malay	73	21.8
	Indian	26	7.8
	Others	17	5.1
	Unknown	13	3.9

Note: According to the statistics published by Singapore government, in 2013, 50.6% of secondary students were boys and 49.4% were girls. Hence, girls were slightly underrepresented in this data. Projections from the Census of Population 2010 report showed an estimated of 67.4% Chinese, 17.8% Malays, 10.7% Indians and 4.1% others currently in secondary schools (Department of Statistics Singapore²).

The 335 participants from N(T), N(A) and EXP included all races. According to Department of statistics (Department of Statistics Singapore³), in 2013, enrolment of secondary 1 and 2 students in government and government-aided secondary schools consisted of 60.4% EXP, 26.6% N(A) and 13.0% N(T). N(A) and N(T) students were overrepresented in this study, while EXP students were underrepresented. However, an overrepresentation of N(A) and N(T) is beneficial for this study as their academic achievements were lower than their EXP counterpart in PSLE. Hence, they are more likely to be disengaged.

6.5 Validity and Reliability of SEI and SBI

6.5.1 SEI

Factor analysis was conducted on the 33 items in the SEI. Kaiser-Meyer-Olkin measure of adequacy was .916 and Bartlett's test of sphericity was significant [X^2 (528) = 4847.84, $p < 0.001$]. The results of the total variance showed the SEI being having 6 factors. Analysis of the loadings in rotated (varimax) factor matrix (Appendix 1) was

² http://www.singstat.gov.sg/Publications/population.html#population_and_population_structure

³ <http://www.singstat.gov.sg/statistics/browse-by-theme/education-and-literacy>

done and a comparison between the theoretical construct and empirical data collected is shown in TABLE 6.

TABLE 6 COMPARISON BETWEEN THEORETICAL CONSTRUCT AND EMPIRICAL DATA

Student– teacher rela- tionship		Peer sup- port		Future aspirations and goals		Family sup- port		Control and rele- vance		
TH	EM	TH	EM	TH	EM	TH	EM	TH	EM	EM
3	3	4	4	8	8	1	1	2	2	24
5	5	6	6	11	11	12	12	9	9	25
10	13	7	7	17	17	19	19	15	<u>10</u>	<u>29</u>
13	16	14	14	18	18	28	<u>27</u>	24	15	31
16	20	22	22	29			28	25		<u>32</u>
20	21	23	23	32				27		33
21	30		<u>26</u>					31		
26								33		
30										

Note: TH: Theoretical Model; EM: Empirical-based Model. The underlined items did not load according to the theoretical model (Appendix 2).

Pearson correlation coefficient was computed to assess the relationships between the factors. Table 7 summarized the results. Overall, the correlations between all factors were positive and significant at the 0.01 level (2-tailed).

TABLE 7 CORRELATIONS BETWEEN FACTORS

	Student- teacher	Peer support	Future goals	Family support	Conforming to instructions	Perceived Success
Student-teacher	-					
Peer support	.577	-				
Future goals	.542	.483	-			
Family support	.547	.519	.568	-		
Conforming to instructions	.588	.390	.534	.422	-	
Perceived Success	.598	.483	.663	.544	.544	-

Item 4 was excluded from the data analysis as the communality was low (.332). Item 27 was also eliminated as rotated factor matrix revealed the possibility of it being under two factors (Appendix 3). Although items 10, 26, 29 and 32 did not load according to the original factors, they were included in the data analysis. The thirty one items

SEI used in this study were reclassified into different factors according to the empirical data and 6 factors were identified as illustrated in TABLE 8.

TABLE 8 NEW FACTORS OF SEI

Engagement	Factors	Items No.	No. of items
Affective	Student–teacher relationships	3, 5, 13, 16, 20, 21, 30	7
	Peer support for learning	6, 7, 14, 22, 23, 26	6
	Family support for learning	1, 12, 19, 28	4
Cognitive	Future aspirations and goals	8, 11, 17, 18	4
	Conforming to instructions	2, 9, 10, 15	4
	Perceived success	24, 25, 29, 31, 32, 33	6

Akin to the results of Portuguese study, SEI item 26 “I feel safe at school” was loaded under the factor “Peer Support for Learning”. As Moreira et al. (2009, 313) suggested, this might be due to students associating school safety to peer support, rather than their relationship with teachers. Similarly, item 10 was loaded into a different factor as students were more likely to view school rules in a broader context. The original factor “Control and relevance”, was separated accordingly into two new factors, “Conforming to instructions” and “Perceived success”. These two factors were named after reviewing all the items in each category. This study supports the findings done on Portuguese students and further substantiates the impact cultural factors have on student engagement.

The reliability test was next performed to find the Cronbach’s Alpha of the new factors (TABLE 9) and instrument. The Cronbach’s Alpha of the whole instrument was .939.

TABLE 9 CRONBACH'S ALPHA OF EACH FACTOR

Factor	Cronbach’s Alpha
Student–teacher relationships	.867
Peer support for learning	.834
Future aspirations and goals	.812
Family support for learning	.771
Conforming to instructions	.787
Perceived success	.841
Affective engagement (17 items)	.907
Cognitive engagement (14 items)	.897

6.5.2 SBI

Factor analysis was conducted on the 9 items in the SBI. Kaiser-Meyer-Olkin measure of adequacy was .916 and Bartlett's test of sphericity was significant ($X^2(36) = 1624.31, p < 0.001$). Although SBI was originally a 3-factorial construct consisting of cynicism, exhaustion and inadequacy, factor analysis performed on the empirical data showed SBI being a construct with no factors. Item 8 was removed from the analysis due to low loading (.377) (Appendix 4). A reliability analysis yielded a Cronbach's Alpha of .911. The final SBI used in this study consisted of 8 items with no factors.

7 RESULTS

7.1 Student Engagement and Burnout in Singapore

Overall student engagement: The mean of the overall engagement measured by SEI was 3.16 (SD=0.39, median=3.10). Students were categorized into three groups: low, average and high engaged. The first group had engagement lower than one standard deviation from the median; second group had engagement within one standard deviation of the median; third had engagement above one standard deviation from the median. Almost 20% of the students were high engaged and 10% of the students were low engaged.

Affective engagement: The mean for all participants was 3.12 (SD=0.42, median=3.06). Likewise, students were categorized into three groups. Approximately 20% of the students were high engaged while 9% were low engaged. Chi-square tests revealed that affective engagement was related to relationships with teachers, relationships with peers and CCA enjoyment; [$X^2(2, 298) = 35.8, p < 0.001$], [$X^2(2, 294) = 9.82, p = 0.007$], [$X^2(2, 299) = 13.0, p = 0.001$] respectively. While 77.8% of students with high engagement had good relationship with teachers, only 14.3% of low-engaged students did so. Similarly, 77% of high-engaged students had good relationships with peers, unlike 53.6% of low-engaged students. Half of the low-engaged students did not enjoy CCA, while only 14.3% of the high-engaged students did not. One-way ANOVA tests found no significant differences in the number of tuition hours, hours studied and spent in school across the three groups.

Cognitive engagement: The mean for all participants was 3.22 (SD=0.42, median=3.14). Similarly, approximately 21% of the students were highly engaged and 10% were low engaged.

Comparison among the three levels of cognitive engagement showed that students with higher engagement studied and slept more. Interestingly, low engaged students

spent more time in school than their average engaged counterpart as shown in TABLE 10.

TABLE 10 COMPARISON OF COGNITIVE ENGAGEMENT

Engagement	Low		Average		High		F	df total	P
	Mean	SD	Mean	SD	Mean	SD			
Hours of sleep	6.08	1.86	6.81	1.67	7.29	1.63	5.07	300	.007
After school	0.90	1.54	2.39	1.98	2.58	1.59	8.29	297	.000
On weekend	0.90	1.55	2.58	2.23	3.37	2.38	11.50	296	.000
Hours in sch	7.67	1.83	7.46	1.37	7.95	1.18	3.15	299	.044

Note: Hours of sleep = Hours of sleep on weekday
 After school = Hours studied after school
 On weekend = Hours studied on weekend
 Hours in sch = Hours spent in school per day

Post-hoc Tukey tests revealed significant differences between low and high engaged students for hours of sleep, with medium effect size ($d=0.69$). High engaged students slept the most while low engaged students slept the least. In terms of actual hours studied after school, low engaged students differed significantly from average and high engaged students. The effect sizes were large ($d=0.84$ and 1.07 respectively). The three groups also differed significantly for hours studied on weekend. Low engaged students spent significantly less time on their studies than the average engaged and high engaged students. The effect sizes were large ($d=0.87$) and ($d=1.23$) respectively. Average engaged students also spent significantly less time studying than their high engaged counterparts, with small effect size ($d=0.34$).

Behavioural engagement: Student who skipped CCA was 6.4% while 29.9% of the participants were absent from school at least a day without official reasons. Chi-square tests revealed that absenteeism and CCA attendance were unrelated.

Engagement and academic achievement: Chi-square tests showed Maths results dependent on behavioural and cognitive engagement; [X^2 (2, 329) = 17.58, $p < 0.001$], [X^2 (4, 301) = 12.05, $p = 0.017$]. Similarly, Mother Tongue results were related to cognitive engagement; [X^2 (4, 292) = 11.89, $p = 0.018$]. Science results were dependent on behavioural, cognitive and affective engagement; [X^2 (2, 328) = 12.54, $p = 0.002$], [X^2

(4, 301) = 22.39, $p < 0.001$]⁴ and [X^2 (4, 298) = 12.20, $p = 0.016$] respectively. It was found that the higher the engagement, the higher the achievement. On the other hand, English results were neither dependent on cognitive nor affective engagement.

7.1.1 Relationship of Engagement Dimensions

One-way ANOVA tests and Independent T-tests were conducted to explore the relationship between behavioural engagement with affective and cognitive engagement as shown in TABLE 11.

TABLE 11 COMPARISON OF ENGAGEMENT DIMENSIONS

Absenteeism	0-few hours		1-3 days		>3days		F	df total	P
	Mean	SD	Mean	SD	Mean	SD			
Cognitive	3.27	0.42	3.13	0.45	3.07	0.36	4.61	313	.011
Affective	3.15	0.43	3.00	0.40	3.15	0.41	3.37	311	.036
CCA attendance					Absent		Present		
			Mean	SD	Mean	SD	t	df	P
Cognitive			2.96	0.58	3.24	0.41	-2.80	307	.005
Affective			2.95	0.53	3.12	0.42	-1.70	305	.091

Students participating in academic studies and CCA were more engaged cognitively. Affective engagement of CCA absentees was not significant from that of their counterparts. Post-hoc Tukey tests revealed significant difference in cognitive engagement between students who were absent for zero to a few hours and one to three days. The effect size was small ($d=0.32$). Differences were also significant for these two groups for affective engagement, with a small effect size ($d=0.36$).

⁴ 1 cell have expected count less than 5

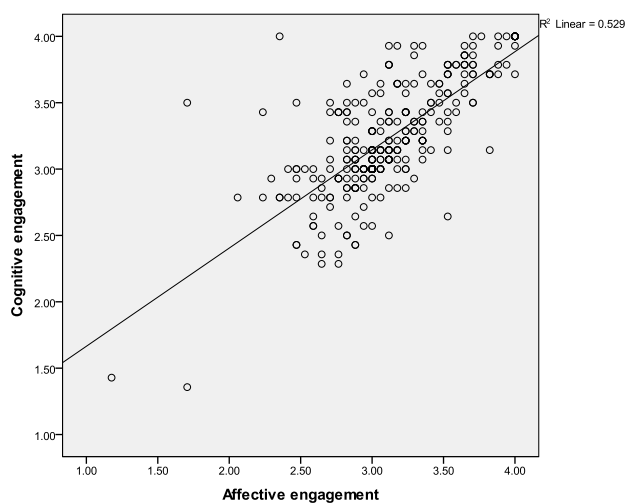


FIGURE 3 CORRELATION OF COGNITIVE AND AFFECTIVE ENGAGEMENT

A Pearson product-moment correlation coefficient was computed to investigate the relationship between affective and cognitive engagement. The scatterplot chart (FIGURE 3) revealed a positive correlation between the two dimensions, $r=.728$, $p < 0.001$. The fairly large effect size suggested that the relationship strength between the two was relatively strong. Linear regression demonstrated a significant positive relationship [$F(1, 299) = 336.47$, $p < 0.001$]. In terms of the overall engagement, around 21% of the students were high engaged, while 10% were low engaged, which was consistent with the percentage found in affective and cognitive engagement.

Frequencies test on burnout revealed that 11.4% of the participants experienced burnout. T-tests performed between students of high burnout and the remaining students found no significant differences in all three dimensions of engagement. Moreover, students who experienced burnout did not differ significantly from their counterparts in the number of hours slept, studied and had tuition.

7.2 Comparison of Various Groups

7.2.1 Grades

The six factors of SEI were compared between Secondary 2 and 3 students as shown in TABLE 12.

TABLE 12 COMPARISON BETWEEN GRADES

	Secondary 2		Secondary 3		t	df	p
	Mean	SD	Mean	SD			
Student-teacher	3.09	0.52	2.97	0.48	2.08	309.30	.038
Peer support	3.16	0.54	3.14	0.45	0.31	299.48	.757
Family support	3.28	0.50	3.10	0.53	3.07	316	.002
Aspirations & goals	3.39	0.49	3.26	0.51	2.47	317	.014
Conforming to instructions	3.18	0.54	2.96	0.54	3.66	317	.000
Perceived success	3.31	0.45	3.16	0.48	2.73	314	.007

Difference in conforming to instructions was the most significant between the two grades, with small effect size ($d=0.41$). Student-teacher relationships had the smallest effect size ($d=0.24$). Absenteeism rate without official reason was higher in Secondary 3 than in Secondary 2; [$X^2(3, 323) = 9.22, p = 0.027$], and the absenteeism rate of more than three days was 8.4% higher for Secondary 3 students than Secondary 2.

A comparison of grade within each stream revealed that students across all streams were generally less engaged in upper secondary, with the most significant decrease in EXP, as shown below in TABLE 13. T-test performed on N(T) stream showed no statistically significant differences for all SEI factors and SBI, while 2 N(A) (mean=3.26, SD=0.54) and 3 N(A) (mean=3.04, SD=0.53) only differed significantly for conforming to instructions [$t(108)=2.09, p=0.039$], with small effect size ($d=0.41$).

TABLE 13 COMPARISON OF EXP STREAM BETWEEN GRADES

	2 EXP		3 EXP		t	df	p
	Mean	SD	Mean	SD			
Student-teacher	3.09	0.48	2.82	0.43	3.41	121.26	.001
Peer support	3.16	0.61	3.07	0.40	0.98	99.37	.329
Family support	3.32	0.46	3.11	0.41	2.90	134	.004
Aspirations & goals	3.51	0.42	3.24	0.50	3.26	134	.001
Conforming to instructions	3.21	0.49	2.82	0.55	4.30	135	.000
Perceived success	3.30	0.44	3.13	0.45	2.29	135	.024
Burnout	3.40	1.44	3.98	1.06	-2.54	94.20	.013

Difference in conforming to instructions between the two EXP stream was the most significant, with medium effect size ($d=0.75$) while perceived success was the least different with small effect size ($d=0.38$).

7.2.2 Streams

Comparison of the three streams showed that EXP students had the most hours of tuition per week, spent the most time in school but had the least positive relationships with teachers (TABLE 14). Tukey post-hoc test revealed that student-teacher relationships of N(T) was significantly higher than N(A) and EXP. The effect size was small for N(T) and N(A) ($d=0.36$) and medium for N(T) and EXP ($d=0.61$). The same test performed revealed that EXP had significantly more tuition than N(T) and N(A), with small effect sizes ($d=0.38$ and $d=0.36$ respectively). N(T) spent significantly less time in school than N(A) and EXP. The effect sizes were small ($d=0.28$) and large ($d=0.89$) respectively.

TABLE 14 COMPARISON AMONG STREAMS

	EXP		N(A)		N(T)		F	df total	P
	Mean	SD	Mean	SD	Mean	SD			
Student-teacher	2.94	0.47	3.03	0.56	3.21	0.42	7.08	313	.001
Hours of tuition	2.11	2.58	1.24	1.94	1.27	2.01	5.66	317	.004
Hours in school	7.97	1.40	7.59	1.35	6.67	1.52	23.07	317	.000

A Chi-Square Test of Independence conducted on streams and absenteeism yielded [$X^2(4, 322) = 21.66, p < 0.001$]. Absence longer than 3 days without official reasons for N(T) was 1.5 times that of NA and 4 times that of EXP. The same test performed on relationship with peers yielded [$X^2(2, 314) = 17.08, p < 0.001$], with 1 in 2 N(T) students not having good relationships with peers often.

A one-way ANOVA test conducted on all female students across the three streams found statistically significant difference for number of hours spent in school; [$F(2,138)=3.08, p=0.049$]. Although a Tukey post-hoc test was unable to detect any significant differences among streams, EXP female students spent the most time in school. The same test performed on all male students across the streams revealed statistically significant difference for burnout; [$F(2,156)=3.36, p=0.037$], showing that N(A) male students were the most burnt out.

Students were asked to rate their relationships with peers and their responses were grouped into two categories: never and sometimes, mostly and always. A chi-square test showed significant difference for relationships with peers among boys of different streams; [$X^2(2, 168) = 11.05, p=0.004$]. Half of N(T) boys did not have good relationships with peers often, while 34.1% of N(A) students and 22.1% of EXP students did not.

Affective engagement differed among the three streams. Exp students spent the most time in school and had good relationships with their peers, as opposed to their N(T) counterparts.

7.2.3 Gender

Independent T- tests performed on gender found girls (mean=3.13, SD=0.53) and boys (mean=3.25, SD=0.50) differed significantly for family support [$t(313)=-2.078, p=0.039$], with boys having more family support. The effect size was small ($d=0.23$). Hours spent in school [$t(313.02)=3.35, p=0.001$] was also significantly different, with girls (mean=8.71, SD=2.51) spending more time in school than boys (mean=7.69, SD=2.91). The effect size was small ($d=0.38$).

The Chi-Square Test of Independence revealed statistically significant difference of CCA attendance between gender, with [$X^2(2, 315) = 9.58, p = 0.008$]. Although boys were more likely to skip CCA than girls, CCA commitment of boys was much stronger as 21.6% of boys attended CCA 3 or more times a week while only 9.8% of girls did so.

A comparison of gender within each streams revealed girls were slightly more engaged than boys as shown in TABLE 15. The medium effect size between N(T) girls and boys indicated medium differences while small effect sizes between EXP girls and boys denoted minor differences.

TABLE 15 COMPARISON OF GENDER WITHIN STREAMS

N(T)	girls		boys		t	df	p	d
	Mean	SD	Mean	SD				
Hours in school	7.31	1.28	6.45	1.55	2.16	67	.034	0.61
N(A)	girls		boys		t	df	p	d
	Mean	SD	Mean	SD				
Peer support	3.27	0.41	3.05	0.58	2.12	66.97	.038	0.44
EXP	girls		boys		t	df	p	d
	Mean	SD	Mean	SD				
Hours in school	8.20	1.01	7.78	1.24	2.20	133.81	.029	0.37
Hours studied after school	2.68	1.87	2.02	1.48	2.29	132	.024	0.39

The comparison of gender in secondary two also showed girls spending more time in school and studying after school (TABLE 16). The effect size for hours spent in school was medium ($d=0.52$) and small for hours studied after school ($d=0.34$), indicating a notable difference in time spent in school. No significant differences were found between the two genders in secondary 3.

TABLE 16 COMPARISON OF GENDER WITHIN GRADE 2

	Sec 2 girls		Sec 2 boys		t	df	p
	Mean	SD	Mean	SD			
Hours spent in school	7.97	1.20	7.28	1.44	3.13	153	.002
Hours studied after school	2.45	2.09	1.80	1.77	2.09	152	.038

Generally, girls were found to be more behaviourally, affectively and cognitively engaged than boys. However, effect sizes ranged from small to medium, revealing that though girls were more engaged, the differences were not highly noticeable.

7.2.4 Academic Achievements

Students were grouped into three categories: high achievers, average achievers and low achievers based on their self-reported academic results. One-way ANOVA tests were conducted on their English, Mother Tongue, Science and Maths results. The results are shown below in TABLE 17.

TABLE 17 COMPARISON OF ACADEMIC ACHIEVEMENTS

Mother Tongue	High		Average		Low		F	df total	p
	Mean	SD	Mean	SD	Mean	SD			
Student-teacher	3.12	0.52	3.02	0.46	2.91	0.52	3.65	310	.027
Peer Support	3.22	0.47	3.18	0.43	2.94	0.61	7.34	309	.001
Family support	3.30	0.54	3.14	0.51	3.09	0.47	4.65	313	.010
Future goals	3.42	0.48	3.26	0.50	3.28	0.56	3.40	313	.035
Instructions	3.22	0.50	3.02	0.54	2.88	0.60	8.87	313	.000
Perceived success	3.37	0.45	3.19	0.45	3.14	0.50	6.66	308	.001
Science	High		Average		Low		F	df total	p
	Mean	SD	Mean	SD	Mean	SD			
Student-teacher	3.21	0.54	3.01	0.47	2.97	0.54	4.65	320	.010
Peer Support	3.19	0.60	3.17	0.46	3.09	0.49	0.79	319	.456
Family support	3.33	0.50	3.22	0.49	3.02	0.57	6.14	321	.002
Future goals	3.58	0.51	3.33	0.47	3.12	0.53	14.31	322	.000
Instructions	3.28	0.58	3.03	0.53	3.01	0.55	5.43	323	.005
Perceived success	3.45	0.46	3.21	0.44	3.15	0.49	7.51	318	.001
Maths	High		Average		Low		F	df total	p
	Mean	SD	Mean	SD	Mean	SD			
Instructions	3.18	0.52	3.08	0.53	2.97	0.59	3.42	323	.034

Significant differences were found across the three groups of students for all subjects except English. However, only conforming to instructions was significantly different for Maths. The results showed that generally, students of lower academic achievements had lower affective and cognitive engagement.

7.2.5 Family Background

Parents' original nationality was associated to student engagement as shown in TABLE 18 below.

TABLE 18 PARENTS' ORIGINAL NATIONALITY

	Both local		At least one is not		t	df	p
	Mean	SD	Mean	SD			
Peer support	3.10	0.48	3.23	0.51	-2.21	305	.028
Aspirations & goals	3.28	0.53	3.40	0.46	-2.01	309	.045
Conforming to instructions	3.00	0.56	3.18	0.51	-2.93	309	.004
Hrs studied after school	2.64	2.10	1.83	1.55	3.90	309.00	.000

Students with an overseas parent were more engaged than students with local parents. However, the small effect sizes ($d=0.24-0.44$) illustrated the absence of large differences between the two groups.

TABLE 19 shows how student engagement differed among the different ethnic groups.

TABLE 19 COMPARISON AMONG ETHNICITY

	Chinese		Malay		Indian		Others		F	df total	p
	Mean	SD	Mean	SD	Mean	SD	Mean	SD			
Student-teacher	2.97	0.51	3.04	0.42	3.42	0.46	3.23	0.43	7.63	315	0.000
Peer Support	3.15	0.49	3.05	0.49	3.31	0.57	3.26	0.56	2.04	314	0.108
Family support	3.13	0.50	3.16	0.56	3.60	0.44	3.38	0.45	7.15	316	0.000
Future aspiration	3.25	0.52	3.35	0.46	3.60	0.41	3.61	0.41	5.98	315	0.001
Instructions	3.01	0.56	3.08	0.49	3.30	0.58	3.34	0.42	3.66	316	0.013
Perceived success	3.17	0.46	3.26	0.45	3.54	0.50	3.38	0.42	5.64	312	0.001

Indians and students of other ethnicities were the most engaged. Of all factors of student engagement, only peer support had no significant differences across the four ethnicities. Tukey post-hoc test revealed that there were significant differences between Indian and Chinese, and Indian and Malay for student-teacher relationships. This suggested that Indian students had evidently better student-teacher relationships than their Chinese and Malay counterparts. Significant differences were found between Chinese and Indian, and Chinese and others for future aspiration. Similarly, family support between Indian and Chinese, and Indian and Malay had statistically significant differences. A Tukey post-hoc test on conforming to instructions detected significant difference between Chinese and Others. Indian and Chinese, and Indian and Malay were also significantly different for perceived success.

7.2.6 School

Student engagement, burnout and other aspects were compared between schools as shown in TABLE 20.

TABLE 20 COMPARISON BETWEEN SCHOOLS

	School 1		School 2		t	df	p
	Mean	SD	Mean	SD			
Burnout	3.52	1.13	4.33	1.04	-6.44	298	.000
Hours of tuition	1.86	2.30	1.30	2.22	2.19	319	.029
Hours of sleep on weekdays	7.12	1.45	6.55	1.84	3.09	286.17	.002

A T-test performed found no statistically significant differences for affective and cognitive engagement, however, medium observable difference between the two schools was found for burnout ($d=0.75$). Hours of tuition and sleep on weekdays had small effect sizes, with $d=0.25$ and 0.34 respectively.

Students' CCA enjoyment was lower in school 1 than school 2; [$X^2 (1, 323) = 7.38, p<0.007$]. However, academic achievements of students for English, Maths and Science were higher in school 1 than school 2; [$X^2 (2, 320) = 41.35, p<0.001$], [$X^2 (2, 322) = 35.8, p<0.001$] and [$X^2 (2, 321) = 23.6, p<0.001$] respectively. School attendance was also better in school 1 than school 2; [$X^2 (2, 325) = 16.37, p<0.001$]. While 3.5% of the students from school 1 were absent without official reason for more than three days, 11% from school 2 were found. The findings showed student engagement differed in different schools.

7.3 Correlation of SEI and SBI

A Pearson product-moment correlation coefficient was computed to assess the relationship between SBI and SEI. The scatterplot chart (FIGURE 4) revealed a weak negative correlation between the two constructs, $r=-.228, p < 0.001$. The small effect size suggested that the relationship strength between the two was weak. Decrease in a unit of burnout would result in 0.667 unit of increase in engagement. In other words, a slight increase in engagement would lead to a more than proportionate decrease in burnout.

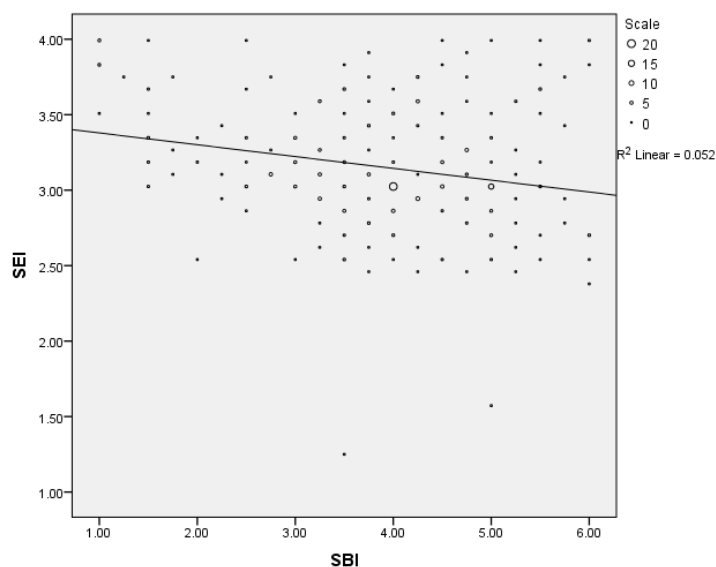


FIGURE 4 CORRELATIONS BETWEEN SEI AND SBI

7.4 Summary of Major Findings

Majority of Singaporean students were engaged and not burnt out. Correlation of cognitive and affective engagement was positive and relatively strong. Besides the six factors of student engagement and burnout, other indicators of student engagement such as relationships with peers, hours studied after school and weekend, hours spent in school, attendance in school and CCA were studied. Results showed that in addition to the six factors measured by SEI, engagement was affected by other factors.

Generally, students who attended school and CCA were more cognitively engaged than those who did not. Secondary 3 students were less engaged affectively and cognitively than their Secondary 2 schoolmates. Secondary 2 and 3 EXP students had the most significant differences in their engagement. Behavioural and affective engagement were significantly different for students in different streams. Attendance in school was the lowest for N(T) students. While EXP students had better relationships with peers, N(T) students had better student-teacher relationships.

Girls were slightly more affectively and cognitively engaged than boys although boys received more family support than girls. However, boys had lower behavioural

engagement as shown by higher absence in CCA. Students with better academic results were also more engaged than those with lower achievements. Additionally, students from minority ethnic groups were more engaged than their Chinese counterpart. Students with non-local parent(s) were also more engaged. Student engagement differed in different schools.

SEI and SBI were weakly and negatively correlated. A slight increase in engagement would lead to a more than proportionate decrease in burnout.

8 DISCUSSION

This study measured affective and cognitive engagement of secondary 2 and 3 students in Singapore with SEI and burnout with SBI. Validity and reliability of SEI and SBI were first tested before examining student engagement and burnout. Six factors of SEI were found: teacher-student relationships, peer support, family support, future goals and aspirations, conforming to instructions and perceived success.

8.1 Behavioural Engagement

Behavioural engagement declined as students advanced from secondary two to three. This decline is consistent with Finn (1993) and could be due to increase in students' autonomy over their own attendance.

However, in contrast to work from Finn (1993) and Mahatmya (2012) where behavioural engagement is hierarchical, our results showed that behavioural engagement is categorical because students may attend CCA but not academic classes. Students with low overall engagement was only 10%, yet almost 30% of the students were absent from school for at least a day without official reasons. This shows that short-term absence in school is an insignificant indicator of disengagement. However, short-term absenteeism might be initial sign of behavioural disengagement. Hence, interventions ought to be done to prevent the occurrence of long-term absenteeism and dropout. The most direct intervention would be to focus on participation in classroom context (Virtanen, Lerkkanen, Poikkeus & Kuorelahti 2013, 5).

8.2 Affective Engagement

Student-teacher relationship is a minor facilitator of affective engagement. Although effort was made by teachers to engage N(T) students as seen in the presence of better student-teacher relationships, the lack of good relationships with peers still impeded affective engagement and in turn, behavioural engagement. Additionally, while girls had higher sense of belonging to school, boys had higher parent support. This suggests that female adolescents used more coping strategies and were more self-reliant

(Patterson & McCubbin 1987, 182-183). As such, concerned parents provided more support for their sons. Moreover, data from World Economic Forum found a slight gender gap in educational attainment in Singapore, indicating the possibility of son preference with respect to education (Social Institutions and Gender Index⁵).

8.3 Cognitive Engagement

Cognitive engagement showed significant decrease across the two grades, particularly across the EXP streams. Surprisingly, secondary 3 students did not report facing more difficulty in their studies than the lower grade. As students' skills and prior knowledge, teachers' pedagogy, learning activities and tasks affected cognitive engagement (Henningsen & Stein 1997, 534; Helme & Clarke 2001, 133-136; Ang & Wang 2006, 9; Lo & Hyland 2007, 229-232; Tai & Koh 2008, 1021; Rotgans & Schmidt 2011, 476; Koh et al. 2007, 96-98; Koh et al. 2008, 7), this finding implies better lesson planning might be required. It is also plausible there is a mismatch between learning content and students' expectations, in agreement to the PETALS framework where learning content is a major factor influencing engagement (The PETALSTM Primer 2007, 49).

8.4 Influences of Ethnicity on Engagement

In contrast to Wang's (2011, 475) study that found gender differences greater than racial differences, this study found largest engagement differences among ethnicity, with the minority ethnic groups (Malay, Indian and Others) more engaged than the major ethnic group (Chinese). This finding could be explained by Singapore's social and education policies. Though English has been the official language and main medium of instruction in schools, mother tongue is still valued for retaining traditions and ethnic identity (Ward & Hewstone 1985, 276). The retention of mother tongue signifies that Singapore gives attention to the various ethnic groups (Ho 2009, 290) by acknowledging ethnicity differences and accepting these differences. Besides English, Singapore has three other official languages – "Malay, Mandarin and Tamil, with Malay being the national language". These policies reflect Singapore being a multicultural and multi-

⁵ <http://genderindex.org/country/singapore>

ethnic state “without a single majority group which manifests historical, demographic, political and economic dominance” (Ward & Hewstone 1985, 272-278).

In addition to the minority having recognition in Singapore, parenting style differs among the ethnicity, resulting in minor ethnicity groups having more parent support. It has been found that Indian and Malay parents discipline their children by “reasoning and rules”. Chinese parents, on the other hand, prefer physical punishment and do not display affection to their children openly (Quah 2004, 77-78). Chinese children may perceive such behaviour as absence of support.

8.5 Burnout

In previous studies, school burnout has been a three-dimension construct (Yang & Farn, 2005, Uludağ & Yaratan, 2010; Kutsal & Bilge, 2012). However, in this study, burnout was found to have no factor (Appendix 4). This implies that secondary students in Singapore were unable to differentiate among the different aspects of burnout. Furthermore, the proportion of burnout students was relatively low at around 11%. As Kuitinen & Meriläinen (2011, 55) suggests, it could be that the participants were incapable of recognizing that they are under stress or burnout.

Singaporean preschool children had difficulty waking up and felt tired due to inadequate night-time sleep (Aishworiya, Chan, Kiing, Chong, Laino & Tay 2012, 102-103). A recent study on Singaporean primary pupils showed similar findings (unpublished results⁶). Sleep deprivation since young could affect academic performances and lead to burnout. In addition, differences of burnout level between the two gender were insubstantial, in contrary to previous findings by Uludağ (2010) and Salmela-Aro et al. (2008) that boys experienced more burnout than girls. As Yang and Farn (2005) reported, it could be that gender inclination, rather than gender, is a better predictor of burnout.

Difference in burnout level between the two schools implies that school context is important in regulating burnout. Additionally, burnout is higher for secondary 3 than 2

⁶ <http://www.todayonline.com/singapore/lower-primary-school-children-not-getting-enough-sleep>

EXP students, which could be the cause of drop in engagement. Entwisle et al. (2005) reported that disengagement can begin “as early as the first grade transition” or even earlier (Archambault 2009, 666). Archambault (2009, 666) argues that initial disengagement begins with psychological disengagement. This suggests that N(T) and N(A) students were disengaged since secondary 1 or primary school, hence, the decline in engagement and burnout is less significant in this study. However, longitudinal studies are required to ascertain this hypothesis.

Burnout is found to be weakly and negatively related to engagement (FIGURE 4). While it affirmed the conclusion drawn by Schufeli (2002, 87) where the two constructs were negatively related, it failed to reaffirm the moderate negative relation. Again, students’ inability to recognise burnout may be the reason.

8.6 Limitations

Firstly, 14% of the students approached did not participate in the survey. While the academic achievement of the majority was unknown, 17.2% of non-participants were identified by their teachers as average achievers, 10.9% were low achievers and 8.6% were long term absentees. This could lead to an over-calculation of engagement. In particular, the long-term absentees were all from the N(T) stream. Since it is evident that long-term absentees are disengaged and at-risk of dropping out, the actual level of engagement of N(T) students should be lower than reported in this study. Second, this study is not representative of all schools in Singapore as there are independent schools with special streams. Nevertheless, this study is representative of government schools that consist of the three streams surveyed. Third, both SEI and SBI are student self-reported survey, giving rise to concerns regarding data accuracy. Nonetheless, this method is useful for assessing aspects – cognitive, affective engagement and burnout, which “are not directly observable” (Fredricks & McColskey 2012, 765).

8.7 Conclusion

Current work provides insights into engagement and burnout of two government schools in Singapore using SEI and SBI respectively. This facilitates large scale studies,

extending it to all streams and levels in Singapore. Importantly, this pilot study showed significant cultural effects on engagement and negative but weak correlation between engagement and burnout. While Singapore's engagement instrument PEI focuses on classroom context, SEI measures student engagement on a broader context while SBI measures students' burnout level. Together, data obtained from all three instruments could better understand overall engagement and learning experiences.

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APPENDIX 1

Loadings of SEI in rotated factor matrix

Rotated Factor Matrix^a

	Factor					
	1	2	3	4	5	6
se7	.687	.126	.023	.088	.177	.130
se6	.678	.202	-.058	-.023	.148	.208
se22	.676	.040	.275	.253	.077	.011
se14	.606	.219	.121	.157	.145	.070
se23	.571	.059	.362	.152	-.045	.075
se4	.504	.145	.030	.117	.049	.085
se26	.452	.279	.269	.276	.035	.067
se30	.255	.636	.349	.142	.100	.053
se20	.104	.631	.116	.109	.153	.151
se16	.149	.616	.170	.182	.188	.147
se21	.241	.610	.224	.201	.120	.110
se3	.256	.528	.194	.198	.286	.142
se5	.251	.483	.102	.112	.311	.158
se13	.325	.476	.081	.155	.278	.057
se25	.224	.134	.641	.163	.117	.122
se32	.026	.337	.553	.057	.257	.283
se24	.134	.090	.544	.144	.250	.191
se33	.061	.327	.529	.090	.103	.309
se31	.024	.331	.520	.173	.251	.203
se29	.236	.180	.473	.268	.170	.132
se28	.253	.083	.292	.628	.129	.101
se1	.186	.173	.121	.622	.119	.187
se12	.079	.294	.038	.538	.277	.160
se19	.217	.196	.193	.507	.040	.280
se27	.386	.263	.165	.405	.002	-.038
se15	.227	.183	.267	.081	.643	.161
se10	-.031	.331	.094	.109	.584	.127
se2	.218	.166	.174	.092	.547	.153
se9	.101	.213	.309	.201	.532	.174
se11	.141	.189	.188	.146	.154	.625
se17	.246	.064	.270	.196	.212	.611
se18	.093	.191	.349	.167	.202	.549
se8	.166	.279	.261	.301	.216	.436

Extraction Method: Principal Axis Factoring.

Rotation Method: Varimax with Kaiser Normalization.

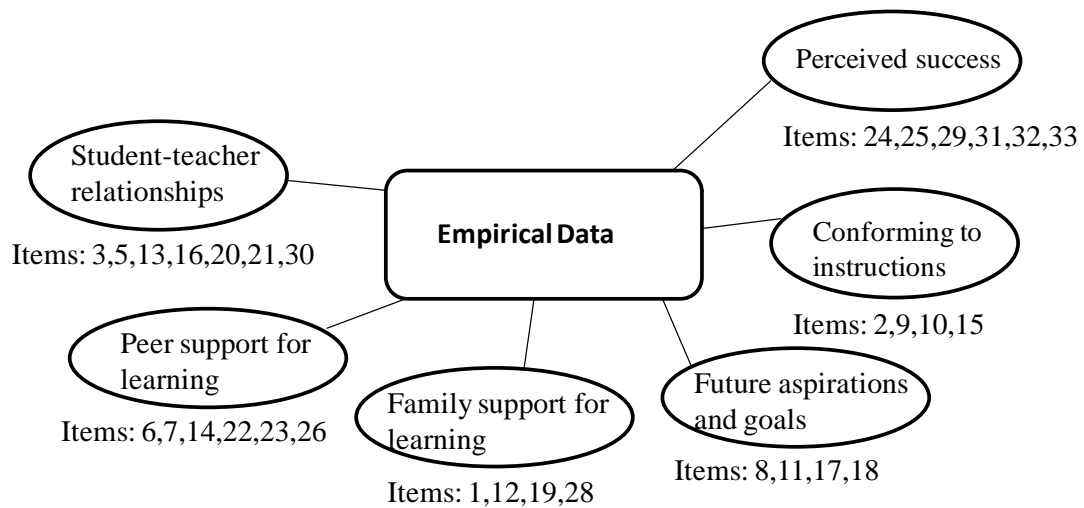
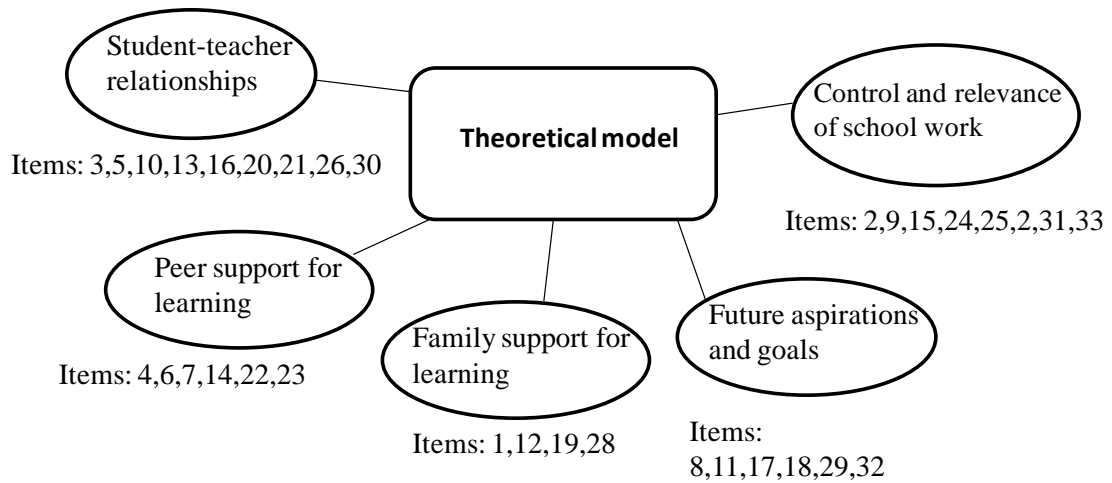
Rotation converged in 8 iterations.

APPENDIX 2

SEI ITEMS:

1. My family/guardian(s) are there for me when I need them.
2. After finishing my schoolwork, I check it over to see if it is correct.
3. My teachers are there for me when I need them.
4. Other students here like me the way I am.
5. Adults at my school listen to the students.
6. Other students at school care about me.
7. Students at my school are there for me when I need them.
8. My education will create many future opportunities for me.
9. Most of what is important to know you learn in school.
10. The school rules are fair.
11. Going to school after high school is important.
12. When something good happens at school, my family/guardian(s) want to know about it.
13. Most teachers at my school are interested in me as a person, not just as a student.
14. Students here respect what I have to say.
15. When I do schoolwork, I check to see whether I understand what I am doing.
16. Overall, my teachers are open and honest with me.
17. I plan to continue my education following high school.
18. School is important for achieving my future goals.
19. When I have problems at school, my family/guardian(s) are willing to help me.
20. Overall, adults at my school treat students fairly.
21. I enjoy talking to the teachers here.
22. I enjoy talking to the students here.
23. I have some friends at school.
24. When I do well in school it is because I work hard.
25. The tests in my classes do a good job of measuring what I am able to do.
26. I feel safe at school.
27. I feel like I have a say about what happens to me at school.
28. My family/guardian(s) want me to keep trying when things are tough at school.
29. I am hopeful about my future.
30. At my school, teachers care about students.
31. Learning is fun because I get better at something.
32. What I'm learning in my classes will be important in my future.
33. The grades in my classes do a good job of measuring what I am able to do.

Theoretical model and Empirical-based comparison of SEI



APPENDIX 3

Communalities of SEI

Communalities		
	Initial	Extraction
se1	.496	.515
se2	.492	.436
se3	.560	.524
se4	.332	.300
se5	.519	.441
se6	.526	.569
se7	.540	.544
se8	.522	.501
se9	.546	.505
se10	.510	.488
se11	.512	.527
se12	.458	.486
se13	.498	.443
se14	.488	.480
se15	.549	.603
se16	.539	.521
se17	.594	.594
se18	.565	.537
se19	.479	.460
se20	.514	.481
se21	.568	.548
se22	.606	.604
se23	.494	.492
se24	.473	.441
se25	.537	.534
se26	.518	.436
se27	.486	.411
se28	.561	.578
se29	.474	.430
se30	.601	.625
se31	.555	.514
se32	.588	.570
se33	.541	.505

Extraction Method: Principal
Axis Factoring.

APPENDIX 4

Communalities of SBI

Communalities

	Initial	Extraction
sb1	.424	.417
sb2	.665	.624
sb3	.703	.740
sb4	.532	.560
sb5	.644	.601
sb6	.635	.622
sb7	.549	.501
sb8	.377	.367
sb9	.506	.512

Extraction Method: Principal
Axis Factoring.

Rotated Factor Matrix of SBI

Rotated Factor Matrix^a

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