
| RESEARCH ARTICLE

Teacher Candidates' Self-Determined Motivation to Develop and Implement Self-Regulated Learning Practices

Charlotte Ann Brenner

University of Lethbridge, 4401 University Drive, 324Turcotte Hall, Lethbridge Alberta, T1K 3M4, Canada

Corresponding Author: Charlotte Ann Brenner, **E-mail:** charlotte.brenner@uleth.ca

| ABSTRACT

Teaching towards self-regulated learning (SRL) is complex and involves the development of skills and sustained motivation. This study examined teacher candidates' (TCs') identification of supports and constraints for their self-determined motivation to develop SRL practices. Findings from one case within a qualitative, longitudinal study of four teacher candidates enrolled in a teacher education program (TEP) focused on SRL in Canada are presented. Supports and constraints for this TC's self-determined motivation in relation to her development and implementation of self-regulated promoting practices are identified and discussed from the perspective of SRL and self-determination theory. The data analyzed included: a questionnaire, interviews, documents, and in-class observations. The finding reveals detailed descriptive codes and categories for SRL and management practices, as well as codes related to TCs' motivational constraints and affordances for their development of SRL practices.

| KEYWORDS

Teacher candidates, self-regulated learning, motivation, self-determination theory, teacher education programs

| ARTICLE INFORMATION

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1. Introduction

Teachers' implementation of self-regulated learning promoting practices (SRLPPs) fosters students' development of underlying learning processes (Winne & Perry 2000; Zimmerman 1990; 2008). Implementing SRLPPs is complex and challenging for novice teachers (Brown & Campione, 1994; Perry, Phillips, & Hutchinson, 2006; Whitaker, 2000). TCs require motivational and instrumental support to develop SRLPPs. This article presents one case within a larger study that investigated the experiences of five TCs enrolled in a TEP and within a self-regulated learning (SRL) cohort over the course of 11 months. Through the theoretical lenses of SRL and self-determination theory (SDT), TC's motivations, development, and implementation of SRLPPs are examined.

2. Self-Regulated Learning

Self-regulated learning refers to three underlying learning processes: metacognitive, motivation, and strategic development (Winne & Perry, 2000). When these processes are fostered, learners are better equipped to regulate their behaviour and emotions, thereby allowing them to successfully engage in varied learning tasks and contexts (Greene, 2018; Hadwin Jarvela & Miller, 2011; 2018; Zimmerman, 1990; 2008). Self-regulated learners are persistent, motivated, critical, and creative thinkers and problem solvers who can work and learn independently and collaboratively (Perry, Yee, Mazabel, Lisaingo, & Maatta, 2017). They have a wide range of flexible learning strategies which they can adapt to suit their learning needs and the demands of specific contexts (Perry, 2013; Rohrkemper & Corno, 1988), resulting in higher achievement levels in comparison to their peers (Zimmerman & Schunk, 2011). All learners can improve their capacities for self-regulating, regardless of socioeconomic status (McClelland & Wanless, 2012; Perry et al., 2017) or learning needs (Bishara, 2016; Stoeger, Fleischman, & Obergruesser, 2015; Wong Harris, Graham, and Butler, 2003).

3. Self-Regulating Promoting Practices

Extended tasks involving multiple lessons and learning goals that require creative and/or critical thinking and problem solving and are instrumental in the promotion of SRL (e.g., Many, Fyfe, Lewis, & Mitchell, 1996; Lodewyk, Winne, & Jamieson- Noel, 2009; Neuman & Roskos, 1997; Kramarski, 2018; Perry, 1998; 2006; 2013; Perry et al., 2017; Samarapungavan, Manizicopoulos, & Patrick, 2008). These forms of tasks offer students opportunities to engage in cycles of learning (e.g., forethought, performance, self-reflection) that require metacognition, motivation, and strategic action (Perry, 1998, 2013; Perry et al., 2018). As students engage in tasks, teachers support SRL by providing students with: choice and higher level decision making (e.g., students decide on research topics, resources, organization of information, timelines); control over challenges (e.g., students are able to make modifications/adaptations to learning tasks based on their learning needs and interests); self-assessment (e.g., students self-evaluate their work in response to criteria); peer and teacher support (e.g., students are provided with scaffold support for their motivation and to build problem solving skills for themselves; embedded assessment (e.g., students are provided with on-going feedback and assessment is used to guide student learning); accommodation for individual differences (e.g., tasks, activities, models of assessment are differentiated to meet the learning needs of all students).

4. Self-Determination Theory

SDT provides a structure to consider how features of TEPs facilitate or hinder TCs' development of practices associated with SRL (Deci and Ryan, 2000). SDT is a motivational theory of human development. SDT theory posits optimal human performance is facilitated through the fulfillment of three psychological needs: autonomy, competence, and relatedness (Deci & Ryan). Autonomy refers to both a sense of volition to act and an openness to the influence of others while still maintaining a sense of choice and freedom about one's thoughts and actions (Deci & Ryan; Sheldon & Ryan, 2011). TCs and teachers perceive autonomy when they can choose instructional practices that are aligned with their goals and values. Competence is the perceived experience of being able to influence and master tasks in one's environment (Evelein, Korthagen, & Brekelmans, 2008; Ryan & Deci; White, 1959). TCs acquire a sense of competence when they have access to resources that support their learning and perceive that they can be successful in implementing new practices (Ryan and Deci). Relatedness is marked by one's ability to connect with others and maintain trusting, respectful relationships (Reeve & Assor, 2011; Ryan & Deci, 2002). Collectively these needs are referred to as self-determination needs (SD needs). It is through the fulfilment of these needs within nurturing environments that people become increasingly internally motivated, therefore, more likely to invest energy in self-regulating their engagement in learning and professional settings (Deci & Ryan, 1985; Ryan & Deci, 2017).

5. Rationale

There is a scarcity of research examining how TCs/teachers develop and promote SRLPPs in classroom settings (Dignath & Büttner, 2018). Implementing SRLPPs is challenging for experienced teachers (See: Brown & Campione, 1994; Kramarski, 2018; Perry, 2013; Michalsky, 2014; Spruce & Bol, 2015). Therefore, we can surmise that for TCs, the development of SRLPPs is particularly difficult. Early in TEPs, TCs are focused on obvious and immediate concerns (e.g., classroom management and lesson planning; Fuller & Brown, 1975; Kyriacou & Stephens, 1999). Additionally, mentor teachers' in-depth understanding of students' needs regarding SRL and their knowledge of how to structure learning environments to support SRL may not be immediately apparent to TCs (Michalsky, 2014), nor may the connections between SRLPPs and positive forms of classroom management (Sierens, 2009). While most mentor teachers implement forms of instruction aligned with promoting SRL, they may not provide TCs with support to look beyond the procedural aspects of teaching or prompt TCs to think in-depth about individual students' needs (Perry et al. 2008; Whitaker, 2000). Given that the development of SRLPPs may be especially challenging for TCs, but highly effective for student learning, this study aims to identify affordances and constraints for TCs' development of SRLPP within their learning contexts.

6. Study Overview

TCs were enrolled in a cohort focused on self-regulated learning (ages 11-14) and SRL. This study presents the case of one TC, Carly. Interview data were gathered from Carly and her university mentor (UM) along with documents related to the TEP, inclusive of syllabi, calendars, and practicum activities. Carly's case serves to highlight the findings of the larger study related to the following research questions:

1. What forms of motivational and structural affordances and constraints for developing general teaching practices and SRLPPs did the TCs in this study perceive in their university and practicum settings?
2. How did the TC in this study implement SRLPPs throughout their practicum experiences?
3. How were these TCs' implementations of SRLPPs connected to their learning contexts?

6.1 Research Phases and Analysis

Participants took part in four research phases that aligned with the terms of the TEP. Phases 1 and 2 occurred prior to TCs' extended 10-week practicum. Phase 3 occurred during TCs' extended 10-week practicum, and Phase 4 after TCs' 10-week practicum. In Phase

1, TCs' were enrolled in campus-based courses, including an inquiry seminar that invited reflective practice and infused SRL content within TCs' learning experiences. TCs also visited their practicum schools one day a week and completed a two-week "mini" practicum at the end of November. Phase one data collection included: (a) a pre-practicum interview, (b) documents pertaining to the context of the TEP and Cohort, and (c) an interview with one of the Cohort's two UMs.

In Phase 2, TCs were engaged in on-campus coursework four days a week and continued to visit their practicum classrooms one day a week. TCs were also enrolled in their second inquiry seminar, in which they began to investigate research questions they had developed in the previous term.

In Phase 3, TCs were placed full-time in middle years schools to complete their 10 week practicum. TCs gradually assumed teaching responsibilities, teaching approximately 20% of the time in the initial weeks before assuming 80% of teaching responsibilities. Phase 2 data included: three observations (beginning, middle, and end of the practicum); three debriefing interviews; TCs' lesson plans; unit plans, and inquiry projects.

In Phase 4 (after practicum), TCs returned to campus and engaged in full-time coursework and the final inquiry seminar. Data in Phase 4 included a post-practicum interview.

Data from all sources (program and course-based documents, interviews, and observations) were triangulated to examine: TCs' perceptions of social and contextual supports and barriers in their university and practicum experiences for their development of SRLPPs over the course of their TEP year.

6.2 Description of Research Activities and Case Analysis

TC Interviews. TCs participated in five interviews, including: a pre-practicum interview, three debriefing interviews, and a post-practicum interview. Interview questions were developed through the sensitizing lenses of SRL theory, SDT, and theory about teachers'/TCs' beliefs (belief data was reported in a previous study; see Brenner, 2021). Interviews gathered information about: (a) practicum experiences (e.g., Have you had a chance to see or use SRLPPs in your practicum setting?); (b) perceptions of affordances and constraints for learning (e.g., Do you feel supported to develop and implement SRL promoting practices?); (c) TCs' perceptions of congruency across their learning contexts (e.g., Is there congruency between your experiences in the TEP generally—the courses you've taken, the theories and practices promoted—and the themes that are part of the SRL Cohort?); (d) relationships TCs were developing (e.g., "What are key relationships in your teacher education experience? "); and (e) TCs' goals and expectations (e.g., What are your goals for [this practicum] [this lesson]?). Pre-practicum interviews took place in October and November.

Audio transcripts were transcribed and reviewed. Notes were made in the margins of the transcripts about non-verbal elements of the interview (e.g., TCs' tone of voice; my impressions of meaning, rudimentary codes). Sensitizing theories provided an overarching structure that focused my analysis on TCs' perceptions of affordances and constraints for their learning; however, codes were also assigned that reflected TCs' words (Agar, 1996; Saldana, 2003). All data were considered and summarized in short phrases in the margins of transcripts (Glasser and Strauss, 1967). Coding was both deductive and inductive. During this iterative process, codes were compared across cases, refined, and consolidated to make them representative of TCs' reported experiences.

Individual codes were aggregated into three categories (Glasser & Strauss, 1967; Graneheim & Lundman, 2004). Categories included: Relationships (C1), Student Characteristics (C2), and Structural Support/Constraints (C3). C1 subsumed codes related to the relational bonds TCs had formed with their SM, UM, students, and peers. C2 included codes indicating TCs' perceptions of students' behaviour, motivational orientations, and previous experiences with SRL. C3 included codes related to TCs' perceptions of freedom to implement SRLPPs, alignment between their learning experiences, the availability of resources (e.g., technology, professional development, sufficient time), and school mentor (SM), UM, and peer support. Table 1 identifies these categories (highlighted in blue), the subordinate codes associated with them, along with units of text that are representative of codes. Consensus coding was utilized to check that codes were trustworthy (Bradley, Curry, and Devers, 2007; Saldana, 2008).

Table 1
Motivational and Structural Affordances and Constraints for TCs' Development of SRLPPs

Description	Example of Affordance	Example of Constraint
Relationships		
➤ TC relationships with peers	TCs' expressions of their connection with their peers.	"We have a Facebook group ... we all remind each other and give support that way ... everybody's really friendly and nice ... We try to do study groups and—we're all trying to help each other." [We share] "mistakes when we're teaching ... we share our own resources and own experiences ..."
➤ Relationship with SM and teachers	TCs' expressions of their connections to their SM and/or other teaching staff in the school. Their expressions of being respected and valued by SMs and staff.	"... I feel supported by my SM. By all the teachers on my team. All the teachers in the school..."
➤ Relationship with UM	TCs' expressions of their connection to their UM.	"She is like a mini counsellor."
➤ Relationships with Students	TCs' expressions of their connections to students.	"We had a connection, and then I was able to better connect and pick up on things."
Student Characteristics		
➤ Motivation	TCs' expressions of students' motivation to learn and engage in classroom activities.	"...because to me, that demonstrated a lot of self-regulation within themselves."
➤ Behaviour	TCs' expressions of students' behaviour and on-task engagement.	"I've been blessed with very good kids; they're all very mature."
➤ Experience with SRL	TCs' expressions of students' prior experiences engaging in academic practices that foster SRL.	"([SM's name] has done a lot of work with them to get them aware of that and what they need to do for themselves."
		<p>"I don't necessarily relate myself with this group of people."</p> <p>"... any idea that I had had to be presented with my UM in the room; otherwise, it was shot down no matter what... [SM] didn't support the implementation of the process ... [SM] treated what I was teaching as completely irrelevant and not necessary." "[UM] ...didn't really make a point to have a rapport with me." "... They complain about my teaching. They complain about what they're doing. They say that they hate all of my lessons ..."</p>

really long time getting them there..."

Structural Supports			
➤ Freedom to try SRLPP	TCs' expressions of freedom or lacking the freedom to try new practices in subjects of their choice.	"I'm given the freedom to do whatever I want."	"Whenever I offered suggestions on how we could incorporate or integrate subjects, [SM] said no."
➤ SM Informational Support	TCs' expressions of support for planning, implementing lessons and developing general and SRLPPs.	[SM helped] "pinpoint a couple of areas that were weaknesses ... [things] to be improved upon"	"I don't get the feeling I would be emailing my SM that [SM] would gladly fill me in on everything that happened during the week."
➤ UM Support	TCs' expressions of UM support for planning, implementing lessons, and developing general and SRLPPs and communicating with their SM (if required).	"[UM] is amazing at giving constructive feedback." "If I give [UM] a lesson, she will respond to it with all these questions—how could you make this better? How could you do this? How could you do that? ... It really gets me to think about it."	"I don't really feel supported by [UM] ... comes in and tells me what I'm doing wrong ..."
➤ Time	TCs' expressions of sufficient time for them to develop SRLPPs	I learned how to streamline doing that process so much that I was able to get all my planning done on the weekends...it actually died down even though I had more to do	"I don't think I had enough time to really fully get at all 60 of them in terms of what they actually needed."
➤ Resources	TCs' expressions of sufficient resources for them to develop SRLPPs	None	"I want to implement technological devices...but not all students have those devices."
➤ Alignment between practicum placement and Cohort focus	TCs' expressions of alignment between the practices, theories, and teaching values they are learning about in their Cohort and those demonstrated within their practicum school.	"...everyone here [in practicum setting] speaks a lot of the same language around [SRL]. It's not disjointed." "It fits in with what I learned at (name of university) before the practicum."	[within the Cohort] "We didn't really talk about any strategies for promoting SRL in the classroom. We talked a lot about theory stuff."
➤ Alignment between university and practicum settings	TCs' expressions of alignment between the practices, theories, and teaching values they are learning about in their university coursework and within their practicum setting.	"I'm seeing the school community that's really promoted [SRL] by the administration, and it trickles down."	"It just wasn't matching up with, like, what I'm learning at [name of university] to what I thought would be evidenced in the classroom."

Observations. Observations took the form of running records (see Perry, 1998). TCs' implementation of SRLPPs was coded 0-2 to indicate: no opportunity to observe (0); the presence of a category (e.g., choice), but not in a way that would support SRL (1); and the presence of a category in a way that would support SRL (2). On separate occasions, two research assistants acted as second coders. A consensus was reached to achieve consistency/consensus across codes (see Bradley et al., 2007).

Inductive analyses revealed that classroom management strategies were implicated in TCs' implementation of SRLPPs. The category of management was added to the observation scale. This category included a wide range of management challenges TCs encountered and management strategies they used. As in the case of other observational categories, management was coded on a 0-2 scale. A code of 0 indicated no management strategies were observed. This was a neutral code (i.e., it does not suggest a missed opportunity or that a management strategy should have been present), whereas a code of 1 indicated that one or more management practices were present, but they were used sporadically and did not appear to facilitate or contribute to a respectful classroom environment. A code of 2 indicated that management practices were used and facilitated and contributed to a respectful classroom environment.

Table 2
Categories, Codes and Examples of Data Drawn from Observations and Lesson Plans of SRLPPs

Categories and Codes	Descriptions	Examples
Choice		
➤ Learning Resources	Students have choice of what resources they use	Students can create and present work in various ways (e.g., document, dictation, video).
➤ Location	Students have choice in where they complete their work (e.g., various work locations in room)	A student asks if they can move to another group to see ... TC agrees if the student can concentrate.
➤ Procedure	Students have choice about their approaches to assignments (e.g., the order in which they complete their work)	“Okay, I’ll show you how I write my observations, but if you have another way, that is all right ... go ahead.” [Student is asking what order they should plot coordinates on a map] TC gives several options and lets the student know it is up to her what she starts with.
➤ Working Partners	Students can choose their own working partners	“They get to work in pairs or work with whoever they want.”
➤ Presentation	Students have a choice about how they present final products (e.g., report or PowerPoint)	“In my class, the ones that really love poetry are very quiet and shy, and so I’m hoping to be able to offer where they present to either a partner or a group, and it’s on the iPad, so I can assess that way rather than in front of the whole class, and I’ll offer those that have a goal to work on their public speaking can try in front of the class.”
➤ Time	Students have the option to spend increased time on tasks	Extended time is provided to students who request it
Control Over Challenge		
	Tasks, activities, and discussions are designed to provide students with varied levels of challenge and expectations appropriate to individuals' learning needs	“I want to make it clear that they do have expectations (referring to teacher assessment); however, they can set the amount that they do.”
Teacher Support		

➤ Model Provided	TC provides the student with a model of task and assignment	Must have legend ... shows on overhead an example of how pictures are used in legend ... (Minimum of 3 items, maximum of 6 legend items).
➤ Verbal and Visual Instruction	Models, diagrams, and demonstrations are provided	"So, this is the point in the demonstration where we stop, and we are going to fill out the sheet [graphic organizer] ... I'll go over it on the overhead ..."
➤ Procedural	TC provides students with instructions about how to complete the task	"Strategies for note taking ... reading the poems aloud, and then I had them record what images come to mind, so I did a little sketch. What sounds do you hear? What feelings do you get?"
➤ Reviewing Tasks and Concepts	TC reviews tasks and concepts multiple times to support students' understanding	TC reviews with individual students how to find the volume of rectangular solids ... reviews formula ... provides demonstrations...
➤ In-Depth Questions	TC uses in-depth questions to guide students to think more deeply about concepts and how they will engage in tasks	"Okay, how could you record the plot? How could you do these things?"
➤ Summarizing information	TC summarizes and simplifies information	TC sits next to a student to help them get started. TC reviews and summarizes the main points of the instructions.
➤ Providing Resources	TC provides students with resources to complete the task (e.g., planning frameworks, a summary of instructions)	e.g., Graphic organizers, websites
➤ Scaffolding Independence	TC guides individual students towards increased independence (e.g., provides appropriate choices and academic expectations for students' current level of functioning)	TC gradually lets students move to their own working spots if they are on task.
Support for Individual Differences		
➤ Monitoring Progress and Understanding	TC is aware of and monitors individual student needs, strengths, and interest	"I'll be giving some guidance as to how to refine some of the trends I noticed; okay, you weren't taking down anything...writing anything here, you might want to go back and find somebody, and so I want to look at it as kind of a comprehensive assessment."
➤ Time	TC adjusts time expectations for individual students when required	"I'd rather go slower and everybody understands something rather than put students through that anxiety."

➤ Small Group Instruction	TC provides opportunities for small group instruction	TC looks around the class and says, "Anyone who needs extra help, just come over here with a fresh sheet of paper." Seven students go to get extra help. TC goes over what to do step by step ... gets a textbook and a game box to give an example with.
➤ Individual Support	TC provides opportunities for students to have 1:1 teacher support	"Almost all of my time when I'm circulating with a couple of tables that are really far behind and really need the support."
➤ Breaking Up Tasks	TC presents tasks to students in small manageable parts	TC uses overhead to demonstrate to students how to make a number. "This ... see ... [counts ticks that create grid] ... [students at table are watching and completing their own] ... got it? ... MR ... So here now ... we put directions like this and how many coordinates you would like to have ... the minimum is 5 ... reviews criteria ... so, if I was like meeting expectations ..."
➤ Adapting Tasks	TC adapts the difficulty, length, and complexity of tasks to suit individual needs	Goes over to the student still writing and aids with writing out prediction. TC gives a student the overhead to provide a model for their own number lines.
➤ Knowledge of Students' Strengths and Needs	TC demonstrates an understanding of students' learning and behaviour strengths and needs	"...just playing to their strengths, a lot of students need help in recording notes and stuff ... So, whenever I make photocopies of anything now, I'll kind of pre-fill out some of them ... I can tell, like, oh okay, they're slower right now, I'll just give this to them."
➤ Observations	TC observes students' understanding of concepts and adjusts lessons and support as needed	"Then I came back, and they still had nothing done, and that was after at least 12 to 15 minutes ... But they had nothing, so I had to set them both up. And I said, do this, do this, do this, do this, and set it up."
➤ Differentiated	Tasks are easily differentiated to offer students multiple entry and exit points and successful engagement	Long term assignments are presented with options for the amount of content; style of presentation (e.g., final project can contain 3-7 typed or handwritten poems). Resources that are appropriate for students' varied levels of development are made available (e.g., poetry books ranging in levels of difficulty).

Embedded Assessment

➤ Student Feedback	TC asks students to indicate if they understand concepts and instructions	"Can I see everyone's hands ... a five tells me you know what to do; a one tells me you are not sure."
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➤ Assigned Questions	TC uses questions that provide insight into students' understanding of concepts	"I'm going to come around and check and make sure everyone got that ..." Prior to beginning poetry lesson TC asked students to respond to a series of questions identifying what forms of poetry and literacy devices they understood.
Task		
➤ Extended	TC provides tasks that extend through multiple lessons	"We are going to have a few blocks to work on this."
➤ Authentic	TC connects task to the relevance of everyday life	TC designs tasks for Health and Career Education class that focuses on online safety. Students are given opportunities to discuss threats and responses to threats and to make a safety pamphlet for their peers.
➤ High Interest	Task is designed to engage students using technology, props, and active experimentation	TC dresses as a "mad scientist" with big goggles, rubber gloves, and oversized tongs to conduct a water density experiment. Students are actively engaging in assisting and making predictions throughout the experiment.
Self-Assessment		
➤ Reflection	TC provides opportunities for students to reflect on their learning experiences	"I have it on my clipboard to remind students what—especially during their work periods—what are you being asked to do? Oh, okay, well, are you on task?"
➤ Provision of Criteria	TC provides or creates criteria with students for task	"Cartesian plane that you are going to make a map of ... when we did this with division one, we made up criteria ... criteria is on the overhead projector." Criteria: minimum of coordinates 3 maximum 5
➤ Provision of Clear Expectations for Behaviour	TC provides students with clear expectations	TC clearly states behaviour expectations and establishes routines for in-class behaviour (e.g., name on board if you leave the room, walk in quietly and gather materials).
Peer Support		
➤ Collaboration	Opportunities for students to work together	Several students are checking with each other about what to do (observational notes). Many students are working together to complete task (observational notes).
➤ Assessment	Opportunities to engage in peer assessment	"So, this is where you pass the story off to everyone in the room." Students give mapped coordinates to their peers to decipher and provide feedback.
➤ Discussions	Opportunities for small and large group discussions	TC provides students with opportunities throughout lessons to

			discuss class content with peers (e.g., working in table groups to discuss forms of internet safety).
Management			
➤ Proximity	TC moves throughout the room, spending time where needed		Circulating helping students.
➤ Stating Behaviour Expectations	TC clearly states behaviour expectations		"Okay, I'm going to leave you for now ... when I come back, I want to see at least something drawn down here."
➤ Wait Time	TC provides wait time after requesting student attention		"I'll wait until I have everyone's eyes up here."
➤ Cues	TC has developed verbal and visual cues to gather students' attention		"We have a common vocabulary now to be able to use with them."
➤ Students' Active Involvement	TC plans active, hands-on opportunities throughout the lesson		Students have multiple opportunities to be involved in demonstrations and hands-on experimentation.
➤ Empathy	TC reacts to student behaviour with empathy		"You seem like you need to get up and walk." "I know we have been talking a bit, and we are going to carry on, and for those doodling, you need to put down your pens because this is about your personal safety ... I know it might seem silly now, but you never know."
➤ Demeanour	Calm		TC uses a calm, composed voice, actions, and expression.
➤ Private, Individualized Redirection	When redirection is needed, TC speaks quietly and privately with student		"I'm noticing that at this table, you're not able to support each other's learning right now." "What do you think we can do to make this work better?"
➤ Classroom Routines	TC has established classroom routines (e.g., how to get materials and routines for entering and exiting the room)		"I used the rolling of the dice method to select the tables, and then also we have numbered heads, so being able to roll the dice twice and select a table and then select a student to participate."
➤ Working with Colleagues	TC works with colleagues to ensure school behaviour expectations are supported		A few students return to the room ... they have been sent back by another teacher for not being on task (observational note). The teacher who sent them back to the room spoke briefly to TCs. TCs thanked her for her help.
➤ Humour	TC uses humour to engage class		e.g., Dressing up as a "mad scientist" for a science experiment.

6.4 Cross Time Analysis

Tables were created for each TC. Initially, units of text drawn from TC interviews that were representative of TCs' identification of supports and constraints for their development of SRLPPs were chronologically ordered within tables. Then, units of text were replaced with corresponding codes. Similar tables were used for observational data to examine changes in TCs' development of SRLPPs. These tables allow for the examination of the stability of TCs' implementation of SRLPPs, and their perceptions of supports and constraints for their learning throughout the TEP year.

7. Representative Case: Carly

Carly was enrolled in the SRL Cohort with a focus on secondary science. Carly's TEP year took place across two practicum settings. Her first practicum setting was in a high-income area and included 29 students (23 students in grade eight and six students in grade seven). One student had a full-time educational assistant, one student was designated behavioural difficulties, and three students were identified as gifted. There were no identified English language learners in the class. Carly's pre-practicum interview and first observation and debriefing took place within this setting. Carly's second practicum setting was in a low SES neighbourhood. She taught 30 grade eight students across all subject areas. Three students were designated as having special needs (one student had a learning disability, and two students were designated as gifted). Carly also identified several other students in the class as requiring high levels of academic and behavioural support. There were no identified English language learners and no educational assistants assigned to the class.

7.1 What forms of motivational and structural affordances and constraints for developing SRLPPs did Carly perceive in her university experiences and practicum setting?

Student characteristics. In her first practicum setting, Carly considered students' characteristics to be an asset to her implementation of SRLPPs. She viewed students in this setting as "mature," "brilliant," "motivated," and eager and able to engage in SRL related tasks. However, in her second practicum, she commented that she "didn't know anything about them [students]" (second debriefing interview, p. 36). Students were diverse in terms of their economic backgrounds, learning, behavioural, and motivational needs. She remarked: "Some kids were in foster care. [Some] kids were wealthy." (post-practicum interview, p. 20). Carly's comments and my observations indicated that student behaviour and motivation created barriers to Carly's implementation of lessons. The class experienced multiple teacher transitions. During the first term, two temporary teachers were placed in the class. Her SM had recently returned from maternity leave and shared her position with a newly placed job share partner. Class routines had not been established (e.g., procedures for entering and leaving the class, expectations for student behaviour). The absence of these structures, along with Carly's lack of experience supporting students with behavioural needs, appeared to contribute to management issues in the class. On numerous occasions, Carly described (and I observed) students exhibiting severe behavioural challenges (e.g., students being disrespectful towards Carly and others, making inappropriate comments and sounds, and demonstrating unsafe behaviours [leaving supervised areas]). The general tone of the class was chaotic, and some students appeared adversarial toward Carly.

During her second debriefing interview, Carly appeared overwhelmed and expressed that she felt unable to design instruction to meet students' needs successfully. Carly had a limited repertoire of management strategies. She had not yet taken coursework focused on positive classroom environments and had experienced few management challenges in her previous setting. She felt she needed "something more" from her instructors, UM, and SM, to help her develop effective management strategies.

Relationships. In her pre-practicum interview, Carly described establishing positive relationships with her first SM, UM, and students. However, over the course of the TEP, Carly's relationship with her first SM deteriorated (described below). She requested and was moved to another practicum placement. In her second placement, Carly developed a positive relationship with her new SM, who provided her with emotional support. However, as described previously, she struggled to form relationships with students in her new practicum context.

Structural supports. Carly's UM provided her with feedback and informational support. Carly remarked that discussions with her UM were "very self-directed ... [her UM would say] tell me three things that you think you did really [well]. And then let's discuss that. And then three things you think you could work on ..." (pre-practicum interview, p. 58). Carly felt her UM "really respected [her] opinions". This self-directed approach supported Carly's sense of autonomy and provoked her to think about and set future teaching goals:

"If I give her a lesson, she will respond to it in all of these questions—how could you make this better? How could you do this? How could you do that? It really gets me to think about it" (pre-practicum interview, p. 57).

Initially, Carly also described her first SM as supportive, noting her SM provided her with the freedom to try new practices and feedback. He modelled how to motivate students by providing them with choices. E.g., he would ask, "What do you think should be the criteria for this? (pre-practicum interview, p. 18). She expressed that seeing SRLPPs in action helped her to understand the connections between positive teacher and student relationships, the creation of well-managed learning environments, and the promotion of SRL (e.g., "... at first I didn't actually think that teacher relationships with students had anything to do with self-regulation, but I now feel like it really does"; pre-practicum interview, p. 17). However, by the time of her first debriefing interview, Carly felt her autonomy and competence were undermined within this relationship. Carly explained that the initial freedom she had in her practicum context dissipated as she assumed greater teaching responsibilities, at which time her SM had grown increasingly restrictive in terms of what and how she taught (e.g., "If I offered suggestions on how we could incorporate or integrate subjects, he said 'no'"; p. 10). These experiences left Carly feeling devalued: "[he] treated what I was teaching as completely irrelevant and not necessary" (post-practicum interview, p. 10). The perspective of Carly's SM is unknown (no SMs participated in this study). In May, upon Carly's request, she was transferred to another practicum setting.

The absence of participation structures and expectations in her second practicum setting, along with students' diverse learning needs, created challenges for Carly's implementation of SRLPPs. She stated:

"I can't prepare lessons for every possible situation ... half the kids have already done Pythagorean Theorem, and they already know all of this stuff ... then there are kids who don't even know what a triangle is in the same classroom"; second debriefing interview, p. 2).

Few structural supports were available for Carly's understanding and implementation of management and SRLPPs. Carly expressed needing more explicit connections between SRL and other complementary theories (e.g., "inquiry-based learning," "personalized learning," "social-emotional learning," and "cooperative learning"). She felt that opportunities needed to be provided in the TEP for TCs to "weave" theories together and to form a "framework" for SRL. Without these links, Carly predicted that her uptake and implementation of SRLPPs would be limited.

As Carly described her challenges, it was apparent she felt alone in her attempts to cope with them. Although her SM gave her freedom to experiment with SRLPPs and to provide feedback ("[She] is amazing at giving constructive feedback"; second debriefing interview, p. 32), her SM was often busy with extracurricular activities and "rarely around". At the time of her second debriefing interview, Carly reported that she had "never actually observed her [SM] teaching."

The only constant form of support for Carly was her UM, who, according to Carly, provided her with extensive assistance that enabled her to cope in her new context. She stated:

"[UM's name] has my back like no one else ... I know that she doesn't do this for everybody, but she'll take my weekly reflections, and she will go through them in extreme detail with feedback and suggestions and all of this because she knows that I'm having a hard time, and I know that she spends more time than she probably should, given how many people that she has to do this with" (second debriefing interview, p. 32 & 34).

Carly indicated in her member check that she had established several close, emotionally supportive relationships with peers in the Cohort. However, she did not view her peers as a source of informational support to address the challenges she was facing during the extended practicum.

Time constraints and class characteristics also shaped Carly's sense of competence and well-being. To meet the diverse needs of students, Carly revised all her units and lesson plans (e.g., "I had to scratch everything"; second debriefing interview, p. 36). This placed unexpected and extensive demands upon Carly's time. Even after revising her plans, Carly worried management issues would prevent her from successfully implementing lessons and covering required content. She expressed feeling "super stressed about that" (second debriefing interview, p. 32) and feared parents and her SM would hold her solely responsible: "The fact [is] that that's going to fall on me, right? If a parent comes back and says, well, my kid doesn't know this – this is your fault" (second debriefing interview, p. 13). During her second, debrief, she described feeling "defeated" and like she was "drowning". She

questioned her abilities to complete the TEP: "I can't do it. I don't know how to do it" (second debriefing interview, p. 10) and her choice of careers: "I'm seriously considering not being a teacher ... I don't want to be in a job that I feel like this" (second debriefing interview, p. 10).

Initially, Carly's unit plans (Career Education; French; Student Learning Profiles) and Inquiry Project examining productive failure contained many SRLPPs. However, upon rewriting her unit plans, she abandoned her initial teaching goal of creating opportunities for SRL through student collaboration. Instead, lessons were now focused on teacher-directed, individual work (use of texts, summative assessment, individual projects). She expressed this change was due to students' reluctance to engage in SRL, management challenges, and pressure to cover content: "[given] the dynamic of the class, collaborative work wasn't optimal ... for the time frame. So, I actually had to focus a lot more on individual work just to ensure that they actually did what they needed to do" (post-practicum interview, p. 2).

This change in foci was evident during observations. See Table 3.

Table 3
Observational Evidence of Carly's Implementation of SRLPPs

Categories	Codes	Observation and Debrief 1	Observation and Debrief 2	Observation and Debrief 3
Choice	Procedure	✓*		
	Working Partners	✓*	✓	
	Scaffold Choice			
	Presentation			
	Responses	✓*		✓
Control Over Challenge	Amount of Work	✓*		
	Time			
	Level of Understanding	✓*		
	Extension Task			
Teacher Support	Verbal	✓*	✓	✓
	Visual	✓*	✓	✓
	Procedural	✓*	✓	✓
	Reviewing Instructions/Tasks	✓*	✓	✓
	In-Depth Questions	✓*		
	Summarizing			✓
	Providing Resources	✓*	✓	✓
	Scaffolding Independence	✓*		✓
	Monitoring Progress		✓	✓
	Checking Students Have Materials			✓
	Providing a Model		✓	

Support for Individual Differences				
	Small Group Support			
	Individual Support	✓*	✓	
	Monitoring Understanding			✓
	Breaking Up Tasks			
	Adapting Tasks	✓*		
	Knowledge of Student Needs/Strengths	✓*		
Embedded Assessment				
	Observational	✓*		✓
	Responding to Feedback	✓*	✓	✓
	Questions		✓	✓
	Multiple Levels of Assessment			
Task				
	Extended	✓*		✓
	Real-Life Applications	✓*		✓
	High Interest	✓*		✓
Self-Assessment				
	Questions for Reflection	✓*		
	Clear Expectations	✓*		
	Criteria	✓*		
	Model Provided	✓*		✓
Peer Support				
	Working Together	✓*	✓	✓
	Peer Assessment			
	Discussion	✓*	✓	✓
Management				
	Humour	✓*		
	Proximity	✓*		
	Stating Expectations	✓*		
	Wait Time		✓	✓
	Cues	✓*	✓	✓
	Reminders			
	Asking Questions about the Appropriateness of Behaviour		✓	✓
	Assigning Consequences for Off-Task Behaviour		✓	✓
	Voice/Changing Tone		✓	✓

Note. Asterix indicates observations of Carly's teaching practices in her first practicum setting.

During Carly's first observation (first practicum setting), students selected and evaluated online resources for projects and established class-generated criteria (a strategy Carly had seen modelled by her SM) to assess the appropriateness of websites.

Expectations for behaviour had been well-established. Seated in table groups of three or four, students listened respectfully to each other's ideas and raised their hands to enter discussions. Students were attentive, actively engaged, and respectful toward one another (e.g., providing each other with space to share their thoughts and considering others' point-of-view). Carly was quickly able to gain students' attention by raising her hand and requesting students direct their attention toward her ("eyes on me"). No management issues were observed.

Throughout the lesson, Carly promoted SRL through collaborative activities. She used metacognitive questioning to stimulate students' thinking and helped students expand their comments ("How did you find your source relevant?" "How do you know?"); modelled how to check the relevance and reliability of sources; and provided scaffolded support for students to develop strategies for finding relevant, reliable resources. At the end of the lesson, students shared their findings and opinions with the class. As she posted their comments on the class web page, she pointed out the page's different categories (i.e., referencing, author, purpose, date, affiliation), thereby helping students develop strategies to categorize information ("What do we put that under?"). Students were involved in decision making. She asked students to inform her of other assignments they had received and responded to students' requests to extend the timeline for their assigned homework from her class.

Carly's second observation occurred two weeks into her second placement. The lesson was a review of light refraction. As opposed to my first observation, Carly's focus was not on providing students with collaborative SRL tasks but rather on traditional forms of teaching. Carly remained in front of the class, presenting definitions of concepts and posing questions ("Is the refraction of light dependent upon the density of materials?"; observational notes). During the lesson, students called out and spoke over Carly. At the midpoint of the lesson, Carly asked students discuss a question with their desk partners (e.g., "If I had a red duo-tang with only the blue wavelength, what would I see?"; observational notes). Most conversations were off task, and the room became very noisy. After the discussion, no students volunteered to share. Students became increasingly inattentive and disruptive (e.g., playing with electronics, chatting, calling out, making noises, and a cell phone rang). Carly stopped the lesson several times and asked students what they were doing and/or if their behaviour was appropriate. She tried to direct their attention toward her ("Eyes up front") and waited for their attention (for up to 5 minutes). Frustrated, she informed students who were not attending that they would be staying for a minute after school and began to write students' names on the board.

From an observer's stance, one student was intent on challenging Carly. This student made sound effects (e.g., hooting, banging). Although Carly attempted to curb this behaviour by writing the student's name on the board and adding check marks next to the student's name (to indicate extra minutes after school), rather than stop the behaviour, the behaviour escalated.

Carly moved on to an activity aligned with her original teaching goal of promoting SRL through collaborative activities. She asked for volunteers to demonstrate light refraction. Most students eagerly raised their hands to volunteer. Six students were chosen to come to the front of the room. Four students linked arms and faced two other students two metres away who also linked arms. The linked group of two students moved quickly toward the group of four, bending forward to create a visual of how light travels when it hits a surface (i.e., it bounces off the surface). After the demonstration, Carly gathered a cursory assessment of students' understanding of light refraction. She asked, "... on a scale of one to five, now do we understand what this image is depicting?" Students then indicated with their fingers their level of understanding. Except for one student, all students indicated they understood.

For the last seven minutes of the class, students explored light refraction by using glass prisms and light (flashlights, cell phone lights). Students had the option of working with partners of their choice and were free to work anywhere in the room. Carly circulated the room and demonstrated to students how to shine the light through the prism to create a spectrum. All students were engaged and on task.

At Carly's request, her final observation was scheduled with the grade eight class she taught three times per week for one block rather than with her regular class. Again, Carly focused on classroom management. However, it was apparent she was attempting to use pre-emptive strategies to mitigate management issues. She had created a highly structured lesson accompanied by directives. The lesson began with a French quiz. Afterward, each student stated a profession (e.g., banker, police officer) in French, which the class repeated. Several students became off task and/or called out during the activity. In response, Carly stopped the activity, raised her hand to indicate she wanted the class's attention, waited for silence, and/or reminded students that the task would take longer if they continued to chat. Once asked, most students redirected their behaviour. Afterward, students worked in pairs to prepare a French conversation about their professional roles (e.g., "What would a conversation between a police officer

and a baker be about?”). One student in the class appeared to be very excited about the activity and repeatedly called out several ideas for conversations. After giving the student several reminders to put up their hand, Carly asked the student to leave the room for five minutes.

Carly chose one of the examples offered and modelled how a conversation might develop. As students worked, several students got up to share their ideas with others. Carly asked students to return to their desks, reminding them that there would be another time for them to share their ideas. Several minutes before the end of the class, Carly redirected the class's attention to the front of the room where she stood. She reminded students of the due date for their templates and instructed them to line up at the door.

Carly commented that the lesson was highly teacher directed, causing some students to become off task (e.g., “I realized they're just listening—they're not doing anything. So that's why some of them got off task”; third debriefing interview). Despite this, portions of the lesson were aligned with Carly's goals of promoting SRL through cooperative activities. She commented that students “seemed super engaged ... which was awesome ...” (third debriefing interview). Carly also felt students had opportunities to: “... regulate their time, ...[develop] plans of action ... [and] utilize their resources [to meet the] deadline” (third debriefing interview). Carly remarked that she was supporting students' SRL by “giving them strategies” to cope with their “panic” about assignments. For example, she would remind students that:

“When you get stuck on something ... wait, move on to the next one, wait for me, or you can use resources. You can look in your textbook. You can try it – see if it works, see if it doesn't work. You can think back to what we know. You know, what do you already know about this stuff? What are you looking for?” (Observational notes).

She expressed that her provision of these strategies helped students to engage in tasks successfully, thereby decreasing their off-task behaviour.

Carly felt the lesson acted as the foundation for future lessons that would more thoroughly support students' development of SRL. She intended to set up an in-class bakery where students would use French phrases to “purchase” items. She felt this would give students time “to practice their conversations with each other” and create opportunities for peer support.

7.2 How were Carly's implementations of SRLPPs connected to her learning contexts?

Carly's self-determined motivational needs were affected by the teaching contexts in which she was placed. Within her first practicum setting, although Carly was connected to students and confident implementing SRLPPs, her sense of autonomy was thwarted. In her second practicum, her implementation of SRLPPs shifted as her sense of competence was challenged. While granted autonomy, she had little in-situ support for adjusting SRLPPs to meet the needs of her context. Carly responded by becoming controlling in her teaching practices, which appeared to threaten students' sense of relatedness and autonomy, seemingly resulting in increased discord within the classroom.

Carly regained her sense of belonging and competence by working with an alternate class for three blocks a week (e.g., “I have better relationships with [these students] ... I have amazing lessons with them ... They participate”; second debriefing interview, p. 29). Within this setting, she began to understand how SRLPPs (e.g., reflecting on learning, monitoring progress, goal setting) supported classroom management. She stated:

“...reflecting on my practice and making mini goals to improve. If I'm seeing a problem area, I'll think back on it ... [if I feel] [students] weren't really paying attention during the modelling ... [I think], 'Okay, how can I improve that?' ... I'll make a goal for next time to do this, this, and this” [third debriefing interview, p. 6]).

At the time of our third debriefing interview, Carly's confidence and optimism had reemerged. She began to think beyond management issues toward larger conceptual aspects of the Cohort (e.g., connections between SRL, positive teacher/student relationships, and classroom management). As she developed relationships with students, the frustration that she had felt regarding their behaviour in her assigned class morphed into a sense of empathy as she came to understand their learning, emotional, and behavioural needs. During her post-practicum interview, she described how she formed “a really solid relationship” with one of her initially most challenging students (the student who was making noises throughout the second observation). This relationship changed the dynamic of their relationship (“I kept working with him, and I kept talking to him, and I found out all of these things that I didn't know before ... he ended up being one of my favourite students”; post-practicum interview, p. 8).

The success Carly experienced towards the end of her practicum in establishing classroom routines and expectations also contributed to her implementation of SRLPPs. At the time of her third observation, she had begun to embed scheduled times for students to work independently, with peers, and one-on-one with her. The development of these pre-emptive organizational structures provided students with a framework to engage in cycles of SRL and appeared to give Carly space and time to work with individual students. She said:

“I get really overwhelmed when suddenly I get swarmed by 20 kids ... so giving them those resources to like set their own goals, to work through it – I feel like that’s helping me a lot more than maybe them right now; front-loading and giving them the resources to do it on their own is beneficial for both of us” (third debriefing interview, p. 20).

8. Additional Findings

Detailed descriptive codes and categories for SRLPPs and management practices emerged from this case study (and other cases included in the larger study). These codes and categories serve to deepen and expand the breadth of previous observation scales (e.g., Perry, 1998; 2013). Furthermore, they provide a detailed account of management issues TCs encounter and their responses to them.

9. Limitations and Considerations for Future Research

Looking forward, researchers may wish to expand upon this study by including the perspectives of multiple stakeholders, involving larger samples and mixed methods design. It would be beneficial to utilize findings pertaining to the identification of SRLPPs and management practices to develop more detailed observational scales for SRLPPs and management practices. With this foundation, links between SRLPPs and positive classroom environments can be investigated. Lastly, there is a need to investigate how SMs are recruited, why they choose to become SMs, and how they are supported in their mentorship roles.

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ORCID ID: <https://orcid.org/0000-0003-1793-091X>

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