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Learning to build strategic capacity for transportation policy change: An interdisciplinary exploration

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ABSTRACT

Realising policy solutions needed to achieve 'sustainable mobility' is difficult because, for one, they require a strategic capacity for "coordinated action" across multiple actors and organizations. Policy learning and policy transfer have been discussed for decades as a way for policy makers to acquire capacity to effect change. However, the process linking policy learning and transfer to the building of strategic capacity remains a black box. One possible reason for this gap is how learning is conceptualised and measured in contemporary transport policy studies. We turn to conceptual and empirical knowledge from education, organizational development, human resources, environmental sciences, and business strategy and management to expand our understanding of learning processes for strategic capacity building. The purpose of this paper is to tease out relevant implications for transportation planning by (1) building a theoretical and empirical database of learning for capacity building across disciplines; (2) examining how such learning is conceptualised and measured, with particular attention to how the literature links learning and strategic capacity building; and (3) reflecting on the implications for the transportation planning field. Findings demonstrate that learning is an integral *part of a larger process* (such as 'innovation'), and mechanisms and conditions of the process drive learning and capacity-building, often accompanying each other. For example, an existing organizational culture that supports learning (*condition*) demonstrates matured practices of horizontal communication systems and relationship building (*mechanisms*). We end the paper with a discussion on implications for transportation planning, both in research and practice. Adding to the discourse on policy learning and transfer, we point to policy learning as a potentially valuable pathway for building a strategic capacity to coordinate action.

1. Introduction

Policy solutions needed to achieve transformative change in the field of transport are difficult to realize. A key reason is that they require strategic capacity for "coordinated action" across actors representing different organizations and sectors (Banister, 2005, p. 71). One way to cope with the difficulty is learning from 'successful' policies implemented elsewhere. The policy transfer framework proposed by Dolowitz and Marsh (1996), often used to examine policy learning, also in transportation, offers a tidy, question-based method for assessing this process: why policies are transferred, who is involved, what is transferred, sources used, effectiveness, and barriers to implementation. However useful for reasons such as cataloguing policy transfer attempts, using the policy transfer framework to asses policy *learning* has clear limitations (Bennett and Howlett, 1992; James and Lodge, 2003; Rose, 1993), especially since, many argue, policy learning is a social or collective process (Sabatier, 1988; Stone, 2001) that occurs over time – key components absent from the policy transfer framework. We argue that *strategic capacity* is a third key component missing. Strategic capacity, as used in business management literature, is the ability of a network of actors to anticipate and influence change through planned, intelligent, and coordinated decisions and actions (Honadle, 1981, p. 577). Learning to build strategic capacity seems necessary for governments and diverse stakeholders to coordinate the abovementioned transformative actions; however, the concept, process, and role of this learning is not well understood, especially as it relates to policy learning.

This deficit of understanding is particularly present in transportation planning, where technical and instrumental rationality dominate both research and practice. In practice, "city to city visiting" seems to be the gold standard (Marsden et al., 2011) and yet remains a 'black box.' In a review of policy learning and transfer in transportation (Marsden and Stead, 2011), the authors, as others do, used the policy transfer framework to explain the process of transfer *and* learning. They concluded: "Remarkably little is understood ... about the precise role of learning from elsewhere and its influence on processes of policy reform since no studies have thoroughly linked policy outcomes to learning" (p.499).

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Successful policy learning seems to be measured by successful *policy implementation*. Using policy implementation as a basis for learning, there has been some evidence of specific policy learning in transportation, for example, with bus rapid transit policies (Wood, 2014), bicycle share programs (Ma, 2017), and road pricing (Attard and Enoch, 2011). Marsden and Stead's (2011) aforementioned conclusion points to not only this specific challenge in transportation planning, but also a distinctive complication in transportation policy transfer research: how to capture and measure a highly social, collective process in a field that gravitates towards standardized toolboxes, procedures, and designs?

It is acknowledged, albeit recently, that new perspectives, knowledge and approaches to transportation are needed to confront contemporary urban mobility challenges. Banister (2005) suggests a switch "from the physical dimensions to the social dimensions" (p.237). Willson (2001) argues for a creative, communicative approach centred around participation and discourse. Schwanen et al. (2011) contends that current transport planning models are limited; that actors, their power or agency, and the social practice of mobility are missing but central components. However, in all these and similar cases, an understanding for *how* actors might learn, or what mechanisms facilitate (or hamper) learning is missing.

In other words, learning and learning to build strategic capacity are acknowledged as necessary 'tools' to achieve transformative change – the issue at hand is *how* to do it. *How do we learn to build capacity to coordinate actions?* By not unpacking these concepts, the field of transportation risks overlooking a potentially pivotal channel for achieving 'sustainable mobility' and not adjusting to the evolving realities of contemporary mobility governance activities. Since the field of policy transfer studies, and especially transportation, does not yet clearly conceptualise or operationalise learning, we turn to conceptual and empirical knowledge from other disciplines. How learning is conceptualised and measured in education, organizational development, human resources, environmental sciences, and business management, might expand our understanding of complex learning processes required to work towards building strategic capacity to coordinate action. Although we use these fields to enhance our understanding, our focus remains on adding insights to the transportation planning field. Our aim is not to define and explain policy learning – plenty of past scholarship exists (i.e., Dunlop and Radaelli, 2013, p. 599–601 for a succinct overview) – but to seek ways to conceptualise and measure learning that specifically targets capacity building.

Using a literature review process with guidance from Van Wee and Banister (2016), the purpose of this paper is to: (1) build a unique database of learning concepts and dimensions from other disciplines, (2), examine how such learning is conceptualised and measured, with particular attention to how the literature links learning and strategic capacity building, and (3) reflect on the implications for the transportation planning field. The paper continues with a description of the methodology and detailed analysis of findings, arranged by the research questions: (a) How does the literature conceptualise learning? (b) How does the literature measure learning? And (c) How does the literature conceptualise the link between learning and building strategic capacity for coordinated action? We close with a discussion regarding implications for transportation planning and future research opportunities.

2. Methodology

Systematic literature reviews are conducted by: determining review question(s); developing search protocol; conducting search; applying inclusion/exclusion criteria; assessing, describing, mapping included literature; synthesising findings; and conclusions or recommendations (Oliver et al., 2005, p.230). This approach fits our research goals of examining diverse disciplines that cover the concept of learning for strategic capacity building, in order to uncover patterns and trends, and to extract relevant implications for transportation planning.

Table 1
Review criteria.

Screening phase	Criterion	Description
0	Search term	(TITLE-ABS-KEY (empirical AND (learn*)) AND TITLE-ABS-KEY (capacity OR "capacity building"))
	Database	SCOPUS
1	Publication date	1995–2017
	Language	English
	Article type	Peer-reviewed journals
	Subject areas chosen	Social sciences, business management, psychology, engineering, and environmental sciences
2	Quality	Top five most-cited articles
	Recency	Top five most-recent articles
	Topic	Must relate directly to a research question
	Transparency	If empirical, methodology must be explicit

We carried out the research in the following steps:

1. Develop search protocol: The search terms (see Table 1) were chosen in order to (a) include, but not limit to, empirical research; (b) maintain a broad, diverse search scope; and (c) include research linking learning to capacity building. Theoretical articles were included in order to examine different conceptual frameworks of learning not yet empirically tested.
2. Conduct the search: Using the search terms, the initial inquiry results were saved on an Excel spreadsheet, and stratified by disciplines. The search was conducted on 17 October 2017, a date which fit the research timeline.
3. Apply criteria: The first set of criteria focused the scope (publication date, language, article type, and subject area). SCOPUS categorized the results into 10 'subject areas' and five were then chosen by the researchers: social sciences, business management, psychology, engineering, and environmental sciences. The other subject areas (computer science, medicine, arts and humanities, economics, 'undefined,' and 'other') were not examined due to low representation or divergent understanding of the concepts or research questions (e.g., "neural capacity" in medicine). Due to the remaining large output, we devised an additional strategy to reduce the dataset to a manageable number of high-quality and up-to-date literature. The second screening phase included selecting the top five most-cited articles and the five most-recently published articles per discipline. In the last round of screening duplicative and irrelevant articles were removed, or (if empirical) where the methodology lacked rigor. When removed, an article from the previous screening round was assessed and added.[1]
4. Assess and describe literature: Using an Excel spreadsheet, we outlined several components of each article, including country of research origin, methodology, findings, and key characteristics related to each of the research questions. Each article was thoroughly read and annotated for themes, frameworks, mechanisms, and relationships.
5. Synthesise findings: Due to the varied nature of the articles (empirical and theoretical), we used a *narrative approach* to synthesise findings (Snilstveit et al., 2012), which may be more appropriate for assessing qualitative and theoretical research. Mapping the content provided an accessible way to understand the findings.
6. Conclusions: based on the synthesis of findings, we summarise the answers to our research questions.

2.1. Limitations

Although this review sought to synthesise relevant findings on learning and capacity building from multiple disciplines, we are aware its

[1] See Appendices A.1–A.3.

limitations. A considerable amount of research eluded our search protocol. The use of and dependence on one database (SCOPUS), lean search terms, and screening stages constrained the output of literature. This is inevitable in a bounded literature review. However, the richness of our findings suggests that the systematic process developed, including the search protocol, was not a hindrance. Furthermore, during analysis, key concepts were reiterated and no new ones added; this can be seen as an indication that a certain degree of theoretical saturation (Lewis-Beck et al., 2003) had been reached. Nevertheless, we acknowledge that our framework should remain open for integrations deriving from the analysis of entirely different sources.

3. Findings

SCOPUS identified 1289 articles published in peer-reviewed journals. After the first round of screening, 764 articles remained, divided into the five disciplines. After the second screening, ten articles from each discipline (50 total) represented the final database. See Appendix A.3 for a complete reference list of all articles included in our analysis.

Learning and capacity building have been researched across a broad range of contexts, disciplines, journals, and countries. This topic has gained global interest; our database included papers based in US, UK, Australia, Europe, Asia, and two from Iran. Of the most-cited papers (25), we see increased interest in the topic between 2000 and 2010. Nearly three-quarters were empirical studies (36 in total), 12 theoretical, and two literature reviews (one systematic review). The methodologies of the empirical studies were evenly split between quantitative (18), qualitative or mixed (18). The following discussion of findings are organized around the research questions.

3.1. How is learning conceptualised?

Whereas much research has focused on individual learning, this database (with a few exceptions) mostly conceptualises learning as a group, collective, or organizational endeavor. The word "learn" is often used synonymously or in conjunction with, for example, innovate, evaluate, knowledge, and action, exemplifying a lack of common conceptual understanding. Thirty of 50 articles directly addressed this research question by placing learning into an existing theoretical framework. Remaining articles loosely or did not associate learning with an existing theory but rather conceptualised it in other ways. For example, social learning is often referred to without citing any existing theoretical frameworks. We synthesised the evidence in Table 2.

3.1.1. Most-cited learning theories

Nearly two-thirds of the articles place learning into an existing theoretical framework, in two dominant areas: organizational learning and social learning. Due to the constraints of our search procedure, some very important learning theories have been excluded (i.e., organizational institutionalism, expansive learning theory, and learning theories in urban planning); however, we observe that our search delivered an impressively diverse collection of theories. Below we extract common variables and mechanisms in order to make distinctions between them.

Communication systems represent a red-thread mechanism for learning; from shared language and symbols in Cohen and Levinthal's (1990) *absorptive capacity*, building shared visions in Senge's (1990) *learning organization* theory, to dialogue and collective reflective in Nonaka and Takeuchi's (1995) *knowledge creation* theory, an organization's ability to (systematically and interminably) encourage high-quality communication results in learning and innovation. Social interaction and collaboration are essential components of *situated social learning* (Lave and Wenger, 1991) and *Communities of Practice* (*CoP*) (Wenger, 1998). Similarly, reflective dialogue, collective focus on learning, and shared norms and values are crucial elements of *Professional Learning Communities* (Stoll and Seashore Louis, 2007).

Another common mechanism includes what Cohen and Levinthal (1990) call "cross-functional relationships" – a horizontally-focused staff who not only easily glide from team to team, but teams are formed across multiple functions or departments. In this way, groups more easily solve problems, also according to Senge (1990). Argyris (1993) characterises this "problem-solving" learning process as error-detecting and correcting, occurring either without adjusting underlying governing variables (the "master program") in single-loop learning, or changing the "master program" in double-loop learning. *Communities of Practice* also assesses organizational collaboration and participative processes.

Many acknowledge the significance of the *context* (i.e., organizational culture). In absorptive capacity, pre-existing knowledge and (capital) investment in research and development influence organizational learning (Cohen and Levinthal, 1990). In *Transfer of Learning*, organizational culture around learning predicates successful application of workplace trainings. *Trainings* in the workplace are often specifically designed, in the format of a course or program, for individuals (or groups) to acquire particular skills, skillset or knowledge (Nafukho

Table 2
Learning as a process.

Dimension (# of articles)	Characterised by	References
Learning as part of a larger process or precursor to (23)	Innovation Performance Leadership Productivity Knowledge creation Entrepreneurship Conditions that shape change Problem solving Capacity building Resilience	(Alavi & Gill, 2017; Beckmann, 2017a; Bougrain and Haudeville, 2002; Brown, 2007; Bruyat et al., 2000; Chen, 2004; Duysters and Lokshin, 2011; Farhad et al., 2017; Folke, 2006; Hopkins, 2016; Hu, Mcnamara, & Mcloughlin, 2014; Hurley et al., 1998; Jones et al., 2017; Koop et al., 2017; Lawrence, 2017; Mackinnon et al., 2002; Macpherson and Holt, 2007; Mirimoghadam and Ghazinoory, 2017; Montes et al., 2005; Park et al., 2011; Pedler and Brook, 2017; Ritala and Hurmelinna-Laukkanen, 2013; Schmid et al., 2016)
Learning as a continual, dynamic process (15)	Regular interactions Evaluation Habituated searching for ideas Emergence Local knowledge transfer Tension	(Baumgartner et al., 2003; Capello & Faggian, 2005; Gentner, 2016; Kameda and Nakanishi, 2003; Louis & Murphy, 2017; Lyles and Salk, 1996; Manley et al., 2015; Pahl-Wostl et al., 2010; Pelling et al., 2007; Preskill & Boyle, 2008; Rhodes et al., 2008; Shiel et al., 2016; Swann, 2017; Tu et al., 2005)
Learning as the result of (9)	Training Shared agency Productive struggle Participation Information exchange Experimentation Uncertainty	(Clarke & Hollingsworth, 2002; Damsa et al., 2010; Lee, 2017; Liu, Van Nederveen, & Hertogh, 2016; Apgar et al., 2017; Nafukho et al., 2017; C. Pahl-Wostl, 2009; Sengupta-Irving T., 2017; Tsekoura, 2016)

et al., 2017). Trainings differentiate from *education* in that the latter represents a broader, theoretical and philosophical system of learning. In the set of literature we examined, various strands of social learning were observed. For example, Bandura's (1977) social learning theory asserts that individual behaviour is learned from the environment through observation and imitation. Situated social learning (Lave and Wenger, 1991) stresses that learning emerges from different conditions (activities, contexts, and cultures).

Experience, broadly speaking, and *sharing experience* is also a repetitive theme. Hands-on experience (as an individual) or a history of experience (as an organization) with mechanisms such as communication and language lay a foundation for learning. For Nonaka and Takeuchi (1995), tacit knowledge is gained through experience and becomes explicit through shared dialogue – that interaction is the key process to creating knowledge. *Transfer of Learning* explores how group/organizational performance is fostered through a specific intervention or experience – a workplace training (Holton and Baldwin, 2003).

3.1.2. Dominant conceptualisations of learning

Conceptually, all articles agree that learning constitutes a process. We systematically categorized each article as falling into one of three conceptualisations: part of a larger process, a continual and dynamic process, or the result of a process.

The dominating conceptualisation (23 articles) is that learning is an integral *part of a larger process*, usually a precursor to an end goal. Innovation is, by far, the most commonly mentioned goal. For example, a firm's ability to "master the innovation process" (Bougrain and Haudeville, 2002, p.746) occurs over time through an interactive and social learning process. Entrepreneurship, problem solving, and leadership were conceptualised in this way. From a social-ecological systems theoretical perspective, social learning, adaptation and self-organization, are needed to manage and build complex, resilient, and adaptive forms of governance (Folke, 2006).

Fifteen articles deemed learning as a *continual, dynamic process* – without reference to a goal. In this way, social learning opportunities are sought based on continually updated information about the environment (Kameda and Nakanishi, 2003). In Swann's (2017) investigation of collaborative management tools, learning is conceptualised within a recurring cycle with collaboration. From a theoretical perspective, Manley and Chen (2015) propose a 'circular model of dynamic learning capability' which incorporates complex, multi-level organizational learning, collaborative relationships, risk perception, and continuous knowledge flows.

Finally, nine of the articles emphasise learning as *the result of a process* or activity, especially an intervention. Participation, engagement, and separate physical space can initiate a learning process (Tsekoura, 2016). Collaborative learning also starts with opportunities to persist, or "productive struggle," in problem solving (Sengupta-Irving and Agarwal, 2017). The learning process is also characterised as the result of a specific intervention, such as a workplace training, mediated by characteristics of the learner, the training, and the existing workplace environment. In other cases, the intervention is a change in leadership, a reward system, or a policy change, Learning is often conceptualised as the result of or reaction to uncertainty – either to *reduce* or *prepare* for uncertainty.

Moreover, for 16 articles, the starting point for learning is emphasised at a social, group, or collective level. For example, strategic alliance-building and professional networks facilitate learning. Another 12 articles emphasise the organization. Using the metaphor of bird flocking systems, Chen et al. (2017) argue that an organization's learning capacity dynamically directs "the swarm towards the best solutions" (p. 2). Other papers (10) emphasise the individual, whereby "individual improvement" or the "skills, behaviours, and achievements of individual leaders" (Jones et al., 2017) drive the learning process. Finally, a handful of articles recognize learning as a continuum between the individual and the organization.

3.2. How is learning measured?

Learning is measured with various empirical approaches, at different scales, and using numerous constructs. Of the 36 empirical studies, 18 represented quantitative studies and 15 qualitative, with three mixed approaches. Within quantitative methods, cross-sectional retrospective surveys dominated (12 studies) and the most common methods of analyses were statistical modelling techniques (i.e., logistic/multiple regression).

Table 3
How learning was measured.

Dimension	Key construct of learning measured (# of articles appeared in)	Examples of operationalisations (with reference)
Process	Collaboration (9)	• Level of interaction between groups (Farhad et al., 2017) • Number of alliances (Hu et al., 2014) • Perception of companionship (Montes et al., 2005) • Partnership assessment framework (Marina Apgar et al., 2017)
	Searching, assessing, assimilating information (9)	• Level of company commitment to – (Simonin, 2004) • Number (increase) of information sources (Ritala and Hurmelinna-Laukkanen, 2013) • Company "knowledge scanning" practices (Tu et al., 2006)
	Performance (9)	• Number of research & development projects (Hu et al., 2014) • Manager evaluation of strategic foresight activities (Rohrbeck & Schwarz, 2013) • Percentage increase of return on assets (ROA) (S. Chen et al., 2017) • Evaluation of capacity building actions (Shiel et al., 2016)
	Participation (7)	• Frequency of participation (in meetings) (Schmid et al., 2016) • Assessment of participant involvement and social negotiation (Maria Tsekoura, 2016) • Group model building over time (Marina Apgar et al., 2017)
Personnel	Leadership (6)	• Number of leadership roles (Bougrain and Haudeville, 2002) • Managerial knowledge of employee performance (Lyles and Salk, 1996)
	Personnel characteristics (5)	• Motivation to participate (Nafukho et al., 2017) • Dedicated personnel for specific knowledge (Bougrain and Haudeville, 2002) • Level of talent (Simonin, 2004)
Culture	Workplace characteristics (5)	• Extent of organizational flexibility (Lyles and Salk, 1996) • Work complexity, work variability, work empowerment (Nafukho et al., 2017) • Stimulation of innovative culture (Liu et al., 2017)
	Opportunities for individual development (4)	• Workplace training relevance and efficiency (Nafukho et al., 2017) • Presence of social referencing (Kameda and Nakanishi, 2003)
	Shared decisions (3)	• Benchmark description, qualitatively assessed (Beckmann, 2017) • Mapping group decision-making processes (Maria Tsekoura, 2016)
	Shared responsibilities (3)	• Level of commitment to improving coordination (Hurley et al., 1998) • Description of collective actions (Swann, 2017)

Experimental or longitudinal (prospective) methods were rare (one each). The most-recent literature base exhibited a noticeable increase in qualitative or mixed method research designs, including interviews, focus groups, document analysis, and case studies. Observational (video analysis) and Participatory Action Research represented one study each. Longitudinal studies (4) were also more prevalent in qualitative research.

Authors of eight non-longitudinal articles explicitly suggest that longitudinal, qualitative approaches are needed for analysing learning and capacity building – due to, for example, the dynamics of relationships, the time it takes "to capture the essence" of growth and impact (Hairon et al., 2017, p. 84), and the "evolution" of variables through time (Montes et al., 2005). Four articles suggest using ethnography to conduct "intimate, intensive, and prolonged fieldwork" (Hairon et al., 2017, p. 82), to have "direct contact with individuals, firms, and organizations engaged in the processes of learning" (Mackinnon et al., 2002, p. 305), and to study the "emerging patterns of dynamic behaviour" (Macpherson and Holt, 2007, p. 186).

Among empirical articles, learning was operationalised using multiple constructs. We extracted these verbatim or through an inductive process and synthesised into three broad dimensions: process, personnel, and culture. Table 3 outlines these dimensions, key constructs, and examples. In many cases, the construct was discribed; however, sometimes it was not explicit. For example, Kameda and Nakanishi (2003) examine social learning and its effect on adaptability. Using a computer simulation game, 120 participants played the game in anonymous groups where social referencing opportunities (individuals learning from others) was possible for some but not all. The constructs were identified as "searching, assessing, assimilating information" and "opportunities for individual development."

3.3. How does the literature link learning and building strategic capacity for "*coordinated action*"?

Nine articles studied connections between learning and building capacity; however, others broadly conceptualised a link between the two concepts. Although the term "*strategic* capacity building" was not used, *capacity building* was – and *strategy* was often used to characterise capacity building activities. In order to assess this research question, we first examine the nine papers that most directly explore the relationship between these concepts. Then, we zoom out to other papers that more broadly inform learning for capacity building (LCB).

Each of the nine articles used 'capacity building' to identify a broad range of activities that develop technical and personal skills for the benefit of an organization, team or group. Brown (2007) offers the most comprehensive definition for *institutional* capacity building, which includes "human resource development, intra- and inter-organizational strengthening, and institutional reform" (p.222). Most agree that capacity building activities occur among top management or among stakeholders and requires "active feedback" among those involved (Park et al., 2011, p. 231). Many suggest that the process of building capacity is continuous, part of long-term, strategic change, and demands resources towards competence building. The learning process can be formal (trainings) or informal (networking). Brown (2007) concludes that a "philosophy of learning" is a key attribute for building capacity (p.231), and this learning is underpinned by strategic management decisions that document a process of and commitment to change.

3.3.1. Learning context as a condition for learning for capacity building (LCB)

Many articles agree that if learning is a key attribute of capacity building, then the context either facilitates or hampers it. For some, institutional forces determine learning because of, for example, the infrastructure of systems, rules, routines in place or the character of the institution governs actions of organizations and individuals. Several specifically argue that these systems inhibit or constrain learning. For example, institutional "lock-in" constrains the innovation process (Mirimoghadam and Ghazinoory, 2017, p. 271) and a lack of institutional commitment is a major obstacle to capacity building activities (Shiel et al., 2016).

The workplace itself is a learning context – the physical setting and place for group processes to form and cultivate. An existing organizational culture which encourages learning through *values and norms* are reflected in: decision making and implementation processes; the quality and influence of its leaders; and firm growth. To understand firm growth, researchers need a deep analyses of the organization's "prevailing rules and norms" and intentions that frame its goals (Macpherson & Holt, 2007, p. 187). However, norms and values are difficult to capture due to their affective and "intangible" qualities (Pedler and Brook, 2017). For example, trust, confidence, and respect appear to be a characteristic *and* a product of an environment that encourages learning.

Other conditions of the workplace drive the LCB process and suggest the importance of a deep-rooted organizational culture that values learning. Autonomy and flexibility in the workplace predict learning transfer from a training (Nafukho et al., 2017) and promote collaboration and performance (Lyles and Salk, 1996). When organizations recognize the need for new ideas and action, the "capacity to innovate" increases (Hurley et al., 1998). Finally, by providing a separate physical space for groups to cultivate relationships and "deep reflection," pathways for social learning widen (Apgar et al., 2017). These conditions shape the organization's value systems, and in turn, employee's perceptions of those values.

The character of the individuals present in LCB also plays a role. Personal belief in the learning process and motivation to learn are associated with greater group collaboration and efficacy and application of learning into the workplace. In one study, group agency was mediated by individual agency – the "deliberate attempt and shared efforts to understand" (Damsa et al., 2010, p. 163). This intent or will to learn (Simonin, 2004) was not only an important characteristic among learners, but also found important among facilitators of a learning experience (Apgar et al., 2017).

3.3.2. Mechanisms that foster learning for capacity building (LCB)

3.3.2.1. Relationships. The strength of relationships or the ability to build relationships, especially among influential group members (Pedler and Brook, 2017), strongly predicts an organization's capacity to learn. From "deep and active relationships" (Ritala and Hurmelinna-Laukkanen, 2013), to local relationships embedded in the community (Shiel et al., 2016), to informal networks with regular meetings, relationships are critical for LCB. However, *more* relationships do not produce more knowledge transfer (Duysters and Lokshin, 2011); firms have a "cognitive limit."

3.3.2.2. Communication systems. Combinations of horizontal and vertical communication channels create "overlapping knowledge" from which group learning can readily emerge (Bougrain and Haudeville, 2002). Articulating learning goals within the group directly impacts knowledge acquisition and participant engagement. Group dialogue, negotiating, reaching collective consensus, and group problem solving are critical aspects of group learning. Furthermore, ease of communication and understanding accelerates knowledge transfer.

3.3.2.3. Available organizational resources. Dedicating staff responsible for the learning process is a way to foster collaboration which stimulates a learning environment and, in turn, builds "administrative capacity" (Swann, 2017). Dedication of (financial) investment towards "in-house capabilities for research and development" (Bougrain and Haudeville, 2002) communicates to staff that the organization takes learning seriously (Koop et al., 2017). Furthermore, a reward system for learning is also linked to building capacity.

3.3.2.4. Leadership styles and support from leadership. Numerous articles cite collaborative leadership or management as critical for LCB. Hurley et al. (1998) nicely summarise this mechanism: "Leaders cannot simply select an organization's culture; they must shape it" (p.52). For example,

Table 4
Key findings and implications for transportation policy learning and research.

Finding		Potential implications for transportation policy learning	Potential implications for research in transportation policy learning
Conceptualisation of learning . . .	• As part of a larger process (i.e., innovation); a continual, dynamic process; or result of a process (i.e., intervention)	A. Policy learning activities (conferences, scan tours, study visits, etc.) are a part of a larger strategy of learning for capacity building (LCB)	A. Orient research methodologies towards social, emergent processes rather than individual experiences or too-broadly defined "city learning"[a]
	• Interventions come in various forms; i.e., new leadership, reward system, workplace training	B. Policy learning activities can also be interventions or trainings, but along with evaluation and a focus on learning for capacity building	B. Interventions (i.e., training or reward system) could be staged and used as experimental methodology to assess learning for capacity building. Activities that involve collaboration, communication, relationship- and alliance building should be included as measurable variables[b]
	• Starts at the group level	C. Policy learning activities addressing only technical or "best-practice" solutions limit the extent and depth of capacity building. D. Policy learning activities for capacity building should address group or collective level and the organization(s) involved. Collaboration, communication, relationship- and alliance building should be encouraged. Individual level 'skill-building' comes secondary.	C. More attention/emphasis on group learning in the policy learning process, rather than a singular (limited) focus on a specific policy
Learning was measured . . .	• Using an even distribution of quantitative and qualitative research methods, and longitudinal studies	E. Incorporate qualitative methodologies in internal evaluations of projects and deliverables; include assessments of process, personnel and organizational culture (examples of operationalisations in Table 3); provide data and results to organizational leaders and use as a reference point for future evaluations	D. Embrace and experiment with qualitative methodologies; include measurements for policy learning process, personnel included (or not) and (organizational) culture of those included in the policy learning activities (examples of operationalisations in Table 3) E. Include duration of policy learning activities, prospectively if feasible, and the experience of the activities (i.e., using multi-sited ethnography with cohorts of stakeholders)
	• Key constructs are process-related (collaboration, performance, participation, and searching, assessing, assimilating information), but also personnel and (organizational) culture	F. Policy learning activities/interventions should include active engagement from/between participants	F. Experiment using methods that analyse collaboration, performance[c]
	• Time and experience important learning variables, but not directly measured	G. Policy learning activities should be sensitive to time (i.e., duration of visit, tours, speakers, etc.) and experience (i.e., using the transport mode under investigation)	G. Include time and experience as (subjective) qualitative variables in policy learning analyses
Learning is a key attribute of capacity building (CB)	• CB activities occur among top management *and* among/between stakeholders	H. For policy learning activities to impact CB, activities should convene curated groups (which may take time, research, and input from networks or outside organizations).	H. Variables to assess capacity building in policy learning activities include activities, platforms, networks, beliefs and actions of (old/new) stakeholders; map and trace how these the variables and relations change (or not) over time[d]
	• CB is continuous, part of long-term strategic change	I. LCB opportunities should be regularly arranged, considered important and legitimate, and part of an overall dynamic organizational learning strategy	I. See above: A – E
	• CB involves directing resources towards competence building	J. LCB opportunities should be adequately funded and staffed, may involve leveraging internal/external resources, fostering/supporting knowledge networks	J. Assess and follow funds directed towards staff, resources, and LCB activities (long-term) to shed additional light on policy learning trajectory
Capacity building (CB) is conditioned by the learning context through ...	• Institutional forces (systems, rules, routines; lock-in, lack of commitment) • Organizational culture (values, norms) • Intangible qualities of organizational culture (trust, confidence, respect)	K. Policy learning activities for CB should be sensitive to these conditions and respond with activities that allow participants some level of freedom from institutional forces, organizational culture, and workplace conditions that may hamper trust, confidence, and respect.	K. Essential is a comprehensive understanding of group, organizational, network and institutional dynamics of those undergoing policy learning activities. See also above: A – E
	• Workplace conditions (organizational flexibility, recognizing the need for new ideas and action, physical space for individual/group development)	L. A totally different physical space or setting/location for these activities might stimulate individual and group development	L. See above: D, E, G
	• Character of individuals present in the learning process (personal belief in learning, group agency)	M. Be aware of, cater for the diversity of individuals	M. Measure individual characteristics and their relations with learning strategies and outcomes[e]
Mechanisms that foster learning for capacity building . . .	• Relationships (strength of and the ability to build)	N. Policy learning activities for CB should foremost address mechanisms not necessarily as skill-building activities, but as fostering and supporting the emergence and organic practice of these skills	N. See above: A, F, K, M

(*continued*)

Table 4 (*Continued*)

Finding		Potential implications for transportation policy learning	Potential implications for research in transportation policy learning
	• Communication systems (group dialogue, reaching collective consensus, articulating goals)	O. Internal and external communication systems need to more deeply understand stakeholders, work towards building coalitions, and framing the issues from multiple perspectives P. See above: N	O. See above: C, D, H, M
	• Available organizational resources (dedicated staff, funding)	Q. Funding and staff should be dedicated to LCB activities where policy learning is included and perhaps a (secondary) goal	P. See above: J
	• Support from leadership (collaboration, commitment, cohesion)	R. Leadership must be present and engaged during LCB activities	Q. See above: C, F, H, M

[a] See Wood (2016) for a conceptual and methodological framework for conducting policy mobilities research, which by "following the people", "materials", and "meetings" the research is more "sensitive to the ephemeral, ethereal and experiential assemblages" that constitute modern policy making.
[b] See Thomas & Bertolini (2015) for an effective communicative workshop on policy transfer with planning stakeholders.
[c] See te Brommelstroet & Bertolini (2008) for a conceptual and applied framework "Mediated Planning Support" systems which combines principles of knowledge management, system dynamics, and software innovation. Intermediate steps in the process are grounded in participation and mutual, social learning.
[d] See Dunlop (2009) for a typology of decision-maker learning in the policy transfer process, one potential variable in policy learning activities.
[e] See Straatemeier et al. (2010) CIMO-logic framework, which identifies and assesses a given context (C), the potential of interventions (I) and mechanisms (M) to deliver expected outcomes or effects (O).

"distributed leadership", focusing on engagement, action, and process rather than position or title, was shown to enhance "concertive actions" in groups (Beckmann, 2017; Jones et al., 2017). Trusting relationships between managers and employees influence employee commitment to organizational change and was found to be a predictor of employees searching and using new information.

4. Discussion: implications for the field of transportation planning

The traditional foundations of transportation planning and research and their biases towards engineering and technical, means-end rationality (Schwanen et al., 2011) generate specific challenges around learning and the transfer of ideas and policies. Transportation planning is a field in which communicative processes are not centre stage (Willson, 2001), where social elements are "poorly accounted for" (Vigar, 2017, p. 40), and in which complexities (e.g., of behaviours and institutions) are starting to be acknowledged only relatively recently (Bertolini, 2007; Salet et al., 2013). Other fields are equally complex but often seem more advanced in their awareness, conceptualisations, and operationalisations of these complexities. We see this as the main reason it is so interesting and relevant to expand the current ways we research policy learning and transfer in this field. It's not about replicating 'best practices' (Macmillen and Stead, 2014); it's about concepts and operationalisations of learning that can help us understand ways to research and also generate potential solutions for practice triggered by experiences in other contexts. Here we discuss implications of our findings, first for transportation policy learning in practice, and then for research (summarised in Table 4).

4.1. Towards a new approach to transportation policy learning practice

Our findings suggest an incongruity between research and practice of policy learning. As previously mentioned, sustainable transportation policy learning activities are now often "city to city visiting" (Marsden et al., 2011), also called study tours, scan tours or excursions – implying group, or collective learning activities. While the goal of these activities appears to be policy implementation, our findings suggest these activities could also be viewed and treated as professional development 'trainings'. We have little understanding of what unfolds during these activities nor how they could help policy makers, transportation planners and relevant stakeholders build capacity to coordinate necessary actions to make change. Although it's acknowledged in policy transfer studies that the transfer process is more complex than copying policies, designs, or manuals, "policy tourism" activities seem to follow an ad hoc and simplistic approach, neglecting the complexity of the topic at hand – sustainable mobility. Our findings demonstrate that the policy learning process, including policy tourism activities, may not demand policy-related outcomes at all, but rather offer potential pathways for building strategic capacity to coordinate actions among the diverse organizations and networks that govern transportation-related activities.

The most-supported mechanisms that link learning and capacity building in this review were: relationships, communication systems, available (organizational) resources, and leadership. In practice, policy learning activities that aim to build capacity would benefit from incorporating these mechanisms as a part of a long-term, strategic change process. For example, in addition to a U.S. delegation visiting Amsterdam, The Netherlands, on a study tour to "learn" about cycling policies, the delegation may also benefit from practicing other LCB elements identified in this review – such as collaboration, relationship-building, tension and problem-solving. At the same time, the same multiple-day (international) study tour, with diverse, key stakeholders from *one* city, could be used as an intervention (or training) to not only study a new idea or policy, but to build relationships and galvanize leadership and support around a project or issue from home. These activities need to be bracketed by institutional and organizational culture of learning and resources to do so.

4.2. Towards a new approach for transportation policy learning research

Findings from our review expand on critiques of the policy transfer framework (Evans, 2009; James and Lodge, 2003): it is not sophisticated enough to study learning, and especially learning for capacity building (LCB). Rather than isolated, linear, individual activities, our findings indicate that learning is an integral part of a larger process (such as "innovation") and may not bound by pre-determined outcomes or products (i.e., policy reform), but rather involve a constellation of complex, social and organizational conditions and mechanisms that shape each other. While adult education theory has been used to study policy learning (Dunlop, 2009), our findings suggest that organizational learning frameworks might benefit future research in this area. Understanding and studying policy learning and transfer as organizational learning phenomena may shed light on how groups of individuals shape transportation policy outcomes and how those outcomes feed further structural, organizational, or systemic changes.

Additionally, disentangling policy learning from policy transfer might provide researchers an opportunity to gain a deeper understanding for how transportation policies change, and for how those involved

build capacity to make those changes. Our findings address shifting the focus from *what* is learned in transportation policy learning to *how* it is learned and, with this, we point to the need to more explicitly orient policy learning and transfer methodologies towards social, group and collective learning processes and emergent dynamics, which is now crucially missing. One possible pathway for assessing learning is to use or adapt the most-cited theories and frameworks identified in this review (see Section 3.1). To continue with the example of study tours, Holton and Baldwin's (2003) Transfer of Learning theory could be used to analyse how the study tour, in this case a type of training or intervention, impacts group or organizational learning.

To more thoroughly address the *how*, researchers need access to direct and observable experiences of practitioners undergoing policy learning activities. "Following" the people, materials, meetings, and narratives (see Wood, 2016) attends to these processes. Here, we build on the work in *policy mobilities*, which strives to expand our understanding of "the various ways humans are mobile" (McCann, 2010 p.112) by calling attention to qualitative methods (Cook, 2008; McCann and Ward, 2012a, 2012b; Peck and Theodore, 2010; Wolman and Page, 2002) and unpacking mobility as social practice and embodied experience (Jensen, 2013). This perspective is extremely valuable, however, to our knowledge, studies on policy mobilities have not yet addressed capacity building. The specific variables suggested here which link learning to capacity building could augment this work. Although existing methods in urban planning can be used to analyse LCB variables like collaboration and performance (i.e., CIMO-logic from Straatemeier et al., 2010), we suggest experimenting with (longitudinal) methods new to transportation but prevalent in mobilities and other fields (i.e., ethnography) to assess dimensions of LCB synthesised here, namely process, personnel characteristics and (organizational) culture.

Finally, a deep understanding of group, organizational, and institutional dynamics whilst undergoing a policy learning activity – and where they are in this process of continuous, long-term, strategic change – is crucial (by "organizations" we draw on the broadest meaning to those directly and indirectly involved in transportation governance, public or private). Further research could, for example, experiment with policy learning activities (like study tours) as an intervention to test various learning (and teaching) methods that enhance LCB mechanisms marked in this review. Additionally, further research could unravel systems in place that inhibit learning or "lock in" the innovation process specific to the field of transportation.

5. Conclusions

Using a literature review process, we turned to conceptual and empirical knowledge from other disciplines to explore learning and how learning contributes to building strategic capacity to coordinate actions. We examined how learning is conceptualised and measured, and how the literature links learning and strategic capacity building. Our main findings from the literature are:

- Learning is most often conceptualised as *part of a larger process*, usually a precursor to a goal (i.e., innovation). The social, group, or collective level is the primary starting point.
- Process, personnel characteristics, and (organizational) culture, were the most common constructs for measuring learning.
- Learning is explicitly part of a capacity building process.
- The learning context is a condition that fosters learning for capacity building (LCB), specifically: organizational flexibility, recognizing the need for new ideas and action, and physical space for group development.
- Mechanisms that foster LCB include relationships, communication systems, available resources, leadership and support.

In sum, learning and capacity building seem to be mutually conditional: learning needs strategic capacity and strategy capacity is strengthened through learning. Capacity building involves a host of intentional activities (i.e., interventions) coordinated between a select group of individuals – often leaders – who are interconnected by a learning process that, over time, produces change. The ability of these leaders to establish and strengthen relationships with other relevant, influential stakeholders is just as important as these leaders partaking in learning themselves. Building capacity involves a chain of incremental and transformative actions, facilitated by strategic management decisions and embedded in an environment that continuously encourages learning, including acting on long-term, proactive plans documenting a process of and commitment to change.

We aimed to tease out relevant implications for transportation planning research and practice regarding policy learning and transfer. For research, our findings point to a need to advance our awareness of and experience with qualitative research methods that incorporate collective dynamics and experience in policy learning, especially with 'policy tourism' on the rise. Questions for future research include: How and where are current transportation "organizations" learning about sustainable mobility policies? What results from that learning? How are they using that learning to build capacity to coordinate actions? In practice, we urge those involved in policy learning activities (i.e., "policy tourism") to consider incorporating capacity-building mechanisms and to use them as a part of continuous, long-term, strategic change process. Although measuring the width of a "best practice" cycle path in The Netherlands can be useful, "best practices" oversimplify the practice practitioners may actually need: relationship-building, communication, and resources to continue learning.

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