Teaching and Teacher Education 87 (2020) 102930

Contents lists available at ScienceDirect

Teaching and Teacher Education

journal homepage: www.elsevier.com/locate/tate

Expert teacher perceptions of two-way feedback interaction

Fiona D.H. Tan [a, *], Peter R. Whipp [b], Marylène Gagné [c], Niels Van Quaquebeke [d]

[a] School of Human Sciences, University of Western Australia, Australia
[b] School of Education, Murdoch University, Australia
[c] Future of Work Institute, Curtin University, Australia
[d] Management Department, Kühne Logistics University, Germany

HIGHLIGHTS

- Expert teachers use Respectful Inquiry (RI) alongside feedback.
- Open-ended questions and attentive listening enhances student feedback uptake.
- Two-way feedback interaction through RI serves to foster positive psychological needs support and metacognition.
- Barriers to two-way feedback interaction are discussed.

ARTICLE INFO

Article history:
Received 9 October 2018
Received in revised form
22 March 2019
Accepted 12 September 2019
Available online xxx

1. Introduction

The importance and influence of feedback is well-established in the literature (Hattie, 2009). The purpose of feedback is to improve learning (Voerman, Meijer, Korthagen, & Simons, 2012) by reducing discrepancies (Hattie, 2007), closing gaps (Sadler, 2010), and improving one's knowledge, and skill acquisition (Moreno, 2004). However, there is disjuncture concerning the effectiveness of unilateral or one-way feedback. Unilateral feedback has been critiqued for its failure to productively engage, guide learning, and monitor performance (Price, Handley, & Millar, 2011; Sadler, 1989). Despite calls to focus feedback on student learning outcomes (Hattie, 2009; Voerman et al., 2012), a third of feedback interventions have reported a decrease in student performance (Kluger & DeNisi, 1996). Research informs that feedback that focuses on self instead of task inhibits learning (Kluger & DeNisi, 1996; Shute, 2008). On the other hand, feedback that focuses on self-regulation, task, and cognitive processing enhances learning (Hattie & Timperley, 2007; Shute, 2008). However, teachers are observed delivering one-way feedback, rather than facilitating learning (Blair & Ginty, 2013; Van den Berghe, Ros, & Beijaard, 2013), and appear 'to close down opportunities for exploring student learning rather than opening them up' (Torrance & Pryor, 1988, p. 621). That is, self-focussed unilateral feedbackthwarts the potential to promote learning (Burke, 2009).

As such, researchers have emphatically advocated for two-way, dialogic feedback, which involves 'elicit(ing) perceptions … and discerning what is needed for improved action' (Boud & Molloy, 2013, p. 709), also referred to as dialogic feedback, two-way feedback is opined to optimise learning; to mitigate learning misconceptions and encourage students to be independent learners (Ajjawi & Boud, 2017; Boud & Molloy, 2013). Although the literature has progressed with the advocacy of dialogic feedback, exploration of two-way feedback interaction is nascent, and the literature is scant on understanding how interactional dimensions in dialogic feedback support students' learning (Hargreaves, 2013). Recent research by Tan, Whipp, Gagné and Van Quaquebeke (2018) described teachers' two-way feedback interaction through Respectful Inquiry (RI; i.e., asking questions, question openness and active listening) and reported that high school students believe it is facilitative of motivation, learning and accesses students' higher learning outcomes such as metacognition. Whilst student-centred feedback using questions is encouraged (Ajjawi & Boud, 2018; Dekker, Schönrock-Adema, Snoek, & Cohen-Schotanus, 2013), and questions help to "clarify confusion, … (and) propel (students) forward" (Harvey & Goudvis, 2000, p. 81), the literature has not adequately described how teachers perceive the potential value and impact of two-way interactive verbal and non-verbal behaviours (i.e., RI behaviours and how students perceive these actions influence psychological needs support (Deci & Ryan, 2000).

* Corresponding author.
E-mail addresses: fiona.tan@research.uwa.edu.au (F.D.H. Tan), P.Whipp@murdoch.edu.au (P.R. Whipp), marylene.gagne@curtin.edu.au (M. Gagné), Niels.Quaquebeke@the-klu.org (N. Van Quaquebeke).

https://doi.org/10.1016/j.tate.2019.102930
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In addition, teacher expertise and quality feedback are synergistic, as it is characterised by pedagogical reasoning skills, the ability to explicate concepts and unpack misconceptions more acutely (Berliner, 2004). However, it remains unclear if the student-identified teachers from previous work (Tan et al., 2018) agree with student perceptions, hold expert teaching qualities (Hattie, 2003; Palmer, Stough, Burdensky, & Gonzales, 2005) and feel self-efficacious during two-way feedback interaction. Thus, consistent with previous research, this work seeks to triangulate student perspectives (Tan et al., 2018) with verified teacher experts (Hattie, 2003; Palmer et al., 2005) who are effective at providing RI related behaviours in two-way feedback interaction. Correspondingly, as teacher self-efficacy has a positive and consistent relationship with teachers' instructional behaviour and student learning outcomes (Son, Han, Kang, & Kwon, 2016), accessing expert teacher perceptions of two-way feedback interaction through RI, the behaviours, outcomes, barriers, and self-efficacy will serve to address these gaps in the literature.

Respectful Inquiry and its associated behaviours (Tan et al., 2018; Van Quaquebeke & Felps, 2018) provides a novel and potentially rich lens to understand how teachers' two-way feedback interaction serves to facilitate higher learning outcomes. Moreover, the question remains whether the student-described two-way interactive behaviours and the associated learning outcomes (Tan et al., 2018) align with teachers' descriptions of RI. Therefore, this work aims to verify these findings, using RI as a model to analyse teachers' two-way feedback interaction, and report teachers' self-efficacy for these described actions. In the following sections of this paper, the theoretical framework, two-way feedback interaction, teacher expertise, metacognition, and barriers to feedback will be discussed.

1.1. Theoretical framework

1.1.1. Self-determination theory (SDT) and respectful inquiry (RI)

Respectful Inquiry (RI; Van Quaquebeke & Felps, 2018) describes verbal and non-verbal behaviours such asking questions, question openness, and attentive listening during interaction. It is a theoretical concept underpinned by Self Determination Theory (SDT; Deci & Ryan, 2000), which postulates that all individuals have three basic psychological needs: autonomy, competence, and relatedness (Deci & Ryan, 2000). In educational settings, teachers' SDT-supportive behaviours have been known to nurture students' psychological needs satisfaction, promote well-being, and performance (Jang, Reeve, & Deci, 2010; Sparks, Dimmock, Whipp, Jackson, & Lonsdale, 2015; Reeve, 2015a; Whipp, Taggart, & Jackson, 2014).

Autonomy relates to a sense of feeling pressure-free, and the self-perception that one is able to make choices volitionally and to be the source of one's own behaviour (Ryan & Deci, 2000). Autonomy supportive behaviours correspondingly convey to individuals a sense of psychological freedom to enact self-determined behaviours (Assor, Kaplan, & Roth, 2002). Teachers fulfil this need by providing support and understanding (Reeve, 2015a) through the acknowledgement of different perspectives and use of non-controlling language (Reeve, 2015b; Su & Reeve, 2011). When enacted, positive outcomes such as increased motivation, engagement and academic achievements ensue (Guay, Ratelle, & Chanal, 2008; Kiemer, Gröschner, Kunter, & Seidel, 2018).

Competence refers to one's ability to execute a particular behaviour skilfully and feeling accomplished in a specific domain. Teachers correspondingly provide competence support through the provision of structure, feedback, and optimal challenge (Jang et al., 2010; Reeve, 2006; Sierens, Vansteenkiste, Goossens, Soenens, & Dochy, 2009). Consistent with this, literature has reported positive associations with students' cognitive, emotional, and behavioural engagement when competence support is evidenced (Jang et al., 2010; Sierens et al., 2009).

Last, relatedness refers to one's basic need for interpersonal connectedness and support by significant others (Deci & Ryan, 2000). Relatedness support is correspondingly conveyed through affective support, friendliness, and commitment in interpersonal relationships. Considerable educational research suggests that the provision of relatedness support not only promotes students' intrinsic motivation, engagement, and higher academic achievement, it is also influential in mitigating academic failure (Sparks et al., 2015; Wang, 2009; Furrer & Skinner, 2003).

While SDT lays the foundation in explaining how teachers' supportive behaviours serve to nurture psychological needs satisfaction and performance (Jang et al., 2010; Sparks et al., 2015; Whipp et al., 2014), RI articulates a specific set of verbal and non-verbal behaviours that fulfil these through two-way feedback interaction. Although RI is used to analyse dialogue in managerial contexts (Van Quaquebeke & Felps, 2018) it brings an innovative lens to the present study of two-way feedback interaction in an educational context.

According to Van Quaquebeke and Felps (2018), three behavioural components of RI, question asking, question openness, and attentive listening, are suggested to be closely interconnected in forming the SDT-supportive communication. First, question asking is a question posed by a questioner to a recipient, with an intent to elicit an answer (Hawkins & Power, 1999). It is opinion seeking, and by virtue of asking a question, suggests interest in the recipient.

Second, question openness (whether closed or open) determines the extensiveness of any given response (Kearsley, 1976). For example, open versus closed questions elicit different responses. Open questions encourage reflective skills (Ogu & Schmidt, 2009), articulation of thinking, and provide access to insights (Lee & Kinzie, 2012; Searle & Vanderveken, 1985). Conversely, closed questions elicit surface level responses such as recall or procedures (Döş et al., 2016). While studies have reported that neutral and genuine questions facilitate the extension of students' thinking during feedback (Chin, 2006), expert teachers' non-verbal feedback behaviours through RI provides an innovative lens to explore higher order understanding.

Third, the accompanying non-verbal behaviours considered salient in RI involve attentive listening (Van Quaquebeke & Felps, 2018). These include eye-contact, head nods, and appropriate facial expressions. Meta-analyses of teachers' non-verbal behaviours, including those currently identified in RI research, have reported a positive influence on student learning outcomes, engagement and interest (Allen, Witt, & Wheeless, 2006; Tan et al., 2018). However, to date, expert teachers' perceptions of RI-related behaviours and their efficacy to display these during two-way feedback interaction have not been explored.

1.2. Two-way feedback interaction

School-based, two-way feedback interaction which occurs between teacher and student should be individualised, contextualised, and involve ancillary verbal and non-verbal teacher behaviours to be effective (Tan et al., 2018). Distilled, it is similar to dialogic feedback, which involves "elicit(ing) perceptions and judgements, and discerning what is needed for improved action" (Boud & Molloy, 2013, p. 709). Such "two-way communicative exchange" (Dixon, 2011, p. 73) is recommended to encourage students' responsibility in active learning, develop self-assessment capabilities, and raise students' awareness of quality performance

(Carless, Salter, Yang, & Lam, 2011; Lee & Kinzie, 2012; Mulliner & Tucker, 2017; Winstone, Nash, Parker, & Rowntree, 2017).

Shaping students' thinking and understanding with feedback interaction is echoed by Alexander (2018) and others who also add that the inclusion of open questions during feedback is catalytic in encouraging students' thinking and learning (Hargreaves, 2014). Alexander (2018) also underscores the importance of developing teachers' dialogic skills, as it is instrumental in nurturing students' cognitive capacities. While we acknowledge the relevance and potential impact this can bring by developing teachers' dialogic skills, we contend that it might be premature as the literature has yet to define, triangulate, and articulate teachers' ancillary RI-related behaviours in two-way feedback interaction behaviours. How teachers facilitate this in the context of feedback through RI-defined behaviours such as question asking, question openness, and active listening (Tan et al., 2018) is still unknown, and the need to triangulate findings with previous work (Tan et al., 2018) would be useful. Furthermore, while the recommendation of dialogic feedback stem from contexts in higher education (Boud & Molloy, 2013; Carless et al., 2011), Alexander (2018) defines dialogic teaching broadly within primary schools. However, what remains under-represented is how dialogic feedback relates to the high school context.

The investigation of two-way feedback interaction through RI is pertinent because feedback involves more than just content. It also carries emotional, relational, and social aspects (Carless, 2013; Pitt & Norton, 2017; Small & Attree, 2016). Justification for this work is further underscored by literature reporting discontent with unilateral feedback. For example, unilateral feedback fails to repair learning, encourages an imbalanced, myopic focus on grade validation, leaves misconceptions unaddressed, lacks feedforward input, and does not enhance self-regulation (Boud & Molloy, 2013; Burke, 2009; Engelsen & Smith, 2010; Gamlem & Smith, 2013; Hattie & Timperley, 2007; Li & De Luca, 2014). As such, this work serves to shed light on how teachers demonstrate this, and serves to supplement an important gap in the literature. While students have reported teachers' two-way feedback through RI (e.g., asking questions, open questions, attentive listening) as effective in nurturing metacognition (Tan et al., 2018), what remains unknown are the actual teacher's perceptions that these identified behaviours are also aimed at nurturing students' metacognition, their sense of self-efficacy for enacting these behaviours, and barriers to classroom implementation.

1.3. Teacher self-efficacy

Teacher self-efficacy is domain specific and refers to "the extent to which the teacher believes he or she has the capacity to affect student performance" (Berman, McLaughlin, Bass, Pauly, & Zellman, 1977, p. 137). Well-established in extant literature is the impact of high teacher self-efficacy, where more learner-centred constructivist instruction (Temiz & Topcu, 2013) and teaching of thinking skills are evidenced (Dilekli & Tezci, 2016). While teacher self-efficacy is based on one's self-referent perceptions and beliefs in their teaching capability (Woolfolk Hoy & Burke-Spero, 2005), actual competence in expertise can be validated and cross-checked (Hattie, 2003; Palmer et al., 2005) by verifying with line managers.

Seeking out expert teachers' self-efficacy in two-way feedback interaction offers a novel and potentially valuable insight because among the many teaching competencies, expert teachers are skilful in providing an optimal classroom environment for learning, and are proficient at providing useful feedback (Hattie, 2003). However, to date, the exploration of expert teachers' self-efficacy in two-way feedback interaction has been under-researched. Dixon (2011) reported that teachers with high self-efficacy believed it was their responsibility to promote student self-regulation through feedback rather than dispensing solutions by telling. However, this data was sampled from primary school teachers, and teacher expertise was not validated. Rahimi and Gheitasi (2010) reported that students who received one-way, written feedback from teachers with high self-efficacy outperformed in writing tasks compared to peers taught by teachers with low self-efficacy. The teacher sample, however, was not validated as expert teachers; thereby affecting the utility of this finding. As teacher self-efficacy has a positive and consistent relationship with teacher behaviour, instructional quality, and learning outcomes (Guo, Dynia, Pelatti, & Justice, 2014; Son et al., 2016), the specific investigation of expert teachers' self-efficacy in two-way feedback interaction solidifies the innovation, importance, and relevance of this research.

1.4. Expert teachers

Literature describes expert teachers, when compared to non-experts, as having more extensive pedagogical content knowledge, including deep representations of subject matter knowledge, and skill at monitoring and providing feedback (Bond, Smith, Baker, & Hattie, 2000). Expert teachers are proficient in creating an optimal learning environment, demonstrate skill in monitoring students' learning, provide useful feedback, and at the same time, demonstrate high care towards students' affective needs (Hattie, 2003). Importantly, teacher expertise may also be validated through a combination of various attributes; qualification (3 years or more of relevant teaching experience), recognition (e.g., documented evidence of impact on student performance), and teaching capability (Palmer et al., 2005). As expert teachers have advanced cognitive schemata and are more skilful in guiding students' understanding (Berliner, 2004; Bian & Schempp, 2004; Meyer, 2004), we postulate that expert teachers may also possess high teacher self-efficacy for RI-related behaviours, as they are better able to demonstrate quality instruction (Barber & Mourshed, 2007; Hattie, 2009), possess extensive subject knowledge (Bond et al., 2000), and are more involved in helping students reach for deep learning and mastery over performance (Hattie, 2003). Therefore, through interview with the verified expert teachers, this work seeks to report practitioners' perceptions of the role of RI in two-way feedback, and the teacher behaviours that facilitate higher learning outcomes such as metacognition.

1.5. Metacognition through feedback

Metacognition involves an individual's self-awareness of cognitive processes and strategies (Flavell, 1979; Flavell, Green, & Flavell, 1995). It is a powerful outcome of learning (Wang, Haertel, & Walberg, 1990) as it builds students' critical thinking skills and learning strategies (Ku & Ho, 2010). Metacognition is a disposition of thinking and learning (Harpaz, 2007), instrumental in impacting students' cognitive development and academic success (Aurah, Cassady, & McConnell, 2014; Sperling, Richmond, Ramsay, & Klapp, 2012). Although teachers are catalytic in raising students' metacognitive awareness (Ozturk, 2017), teachers rarely engage students in actual discourse to reflect about the quality of their thinking or to critically evaluate reasoning (Teo, 2016; van den Berghe et al., 2013), which means opportunities for deep learning remain under exploited. As student-centred constructivist teaching fosters the promotion of deep learning strategies in students (Nijhuis, Segers, & Gijselaers, 2008), research that explicates how expert teachers facilitate two-way feedback interaction to augment metacognition during feedback would be valuable.

Studies of metacognition and feedback are reported for computerised environments (Kapa, 2001; Kramarski & Zeichner, 2001;

Roll, Aleven, McLaren, & Koedinger, 2011). These studies suggest that the integrated use of technology in educational software to provide feedback through questioning is useful and has yielded positive gains such as transfer of learning to new domain areas (Roll et al., 2011). As echoed by Cardelle-Elawar (1995), "to learn, the student must practice thinking and not just apply procedures in rote fashion … students learn best through teacher mediation that permeates their thinking process" (p. 94). Recursive cycles of cognitive thinking are needed to develop self-regulatory skills (Butler & Winne, 1995), and learning is most effectively optimised within a context of social interaction through co-construction of meaning (Vgotsky, 1978). This underscores the importance of teachers' actual face-to-face involvement in the feedback process, compared to computerised environments. Whilst learning outcomes through e-technology-supported feedback are positive, exploration of expert teachers' actual two-way feedback behaviours, and how these lead to student learning outcomes such as metacognition are the focus of this investigation.

1.6. Feedback barriers

Within the literature, many barriers pertaining to unilateral, one-way feedback have been reported. These include issues such as insufficient feedback literacy, time, tight time-tabling, examination-oriented culture, work pressures from high stakes testing, lack of support from school administrators, and lack of training on effective feedback practices (Carless & Boud, 2018; Chin, 2006; Fitzgerald, Danaia, & McKinnon, 2016; Price et al., 2011). Scholars have contended that insufficient guidance in promoting students' feedback literacy (i.e., how students receive interpret and utilise feedback) is problematic (Carless & Boud, 2018). This is because teachers' feedback remains largely transmissive (van den Bergh, Ros, & Beijaard, 2013), a view which accords with findings from Blair and Ginty (2013), that teachers tend to supply justification of feedback without pursuing students' understanding. This lack of guidance from feedback impairs students from learning how to act on feedback (Price et al., 2011). On the other hand, issues such as students' 'blunt approaches' in asking teachers for help might be perceived as challenging teachers' authority (Price et al., 2011, p. 891), which again, inhibits students' learning from feedback.

Other barriers to the provision of feedback include class size and that teachers are often stretched by the congested curriculum (Chin, 2006; Rink, 2013). In addition, high accountability and government examination requirements are reported todrive certain teacher behaviours which in turn, influence classroom learning experiences (Marsh, Farrell, & Bertrand, 2016; Ryan & Weinstein, 2009). Some examples include mirroring teaching to the test and surface learning approaches, which inevitably compromises conceptual depth of understanding and undermines quality learning (Marsh et al., 2016; Ryan & Weinstein, 2009; Thompson, 2013; Yerdelen-Damar & Elby, 2016).

However, what remains under-researched is expert teachers' perceived barriers to two-way feedback interaction. Despite recent scholarly recommendation (Ajjawi & Boud, 2017; Mulliner & Tucker, 2017) and student preference for two-way feedback, reasons for its limited occurrence remain unclear (Gamlem & Smith, 2013; van den Berghe et al., 2013). Expert teachers' perceived ability to access higher order learning outcomes such as metacognition through RI has not been investigated, and therefore this exploration appears warranted.

1.7. The present study

The purpose of this study was to verify and extend previous work (Tan et al., 2018). Specifically, we sought to expand the current understanding of expert teachers' behaviours and outcomes of two-way feedback interaction through RI (Tan et al., 2018), their associated self-efficacy, and perceived barriers to implementation. The use of interviews, through qualitative methodology, provide scope for clarification, in-depth exploration, and data richness (Tolan & Deutsch, 2015).

2. Methodology

2.1. Participants

Nine teacher participants ($N = 9$), 7 females and 2 males, identified by students from a previous study (Tan et al., 2018) were interviewed. Participants came from four independent high schools (2 all-girls and 2 co-ed schools) in Western Australia. This pool of teachers were previously identified by students to be effective in displaying RI-related feedback behaviours, but were not previously validated as possessing expert teacher qualities (Tan et al., 2018). Hence, participants were informed that a verification process based on the expert teacher criteria (Hattie, 2003; Palmer et al., 2005) would be required from their line managers, i.e. Heads of Departments or Deputy Principal, where appropriate. In response to the verification process, three potential participants were not included in this study. The participant teachers specialised in teaching Physical Education (n = 4), Humanities and Social Science (n = 2), Mathematics (n = 1), English Language (n = 1), and Physics (n = 1), respectively. All participants had between 3 and 16 years of teaching experience and taught students from Years 7–11, with some also teaching Year 12.

2.2. Interviews

As qualitative research allow participants' voice and perspectives to be expressed (Tolan & Deutsch, 2015), a one-on-one 60-min semi-structured interview was utilised. Interviews were conducted by the first author and probing questions (Tuckman, 1972) used to gain deeper understanding. The two-part, interview guide was peer-reviewed by academic staff (N = 2) for suitability, comprehension and rigour.

The first part, a scenario-based vignette relating to a hypothetical student (Jim) in a classroom context was extracted from the Motivators' Orientations Questionnaires (Deci, Schwartz, Sheinman, & Ryan, 1981; Reeve, Bolt, & Cai, 1999) with four given options to choose, which would reflect if teachers were highly controlling, moderately controlling, highly autonomous or moderately autonomous (Deci & Ryan, 2000). The scenario presented to teachers related to a hypothetical average student, Jim, who had been displaying disinterest in class and not been handing in assignments over the past two weeks. Prior contact with his mother via phone call yielded no insightful detail. Teachers were asked to respond to this scenario and explicate how the two-way feedback interaction would potentially unfold. This vignette was chosen because experts have highly automatized actions (Norris, 1985), otherwise understood as reflection that is situated in action or reflect-in-action (Schön, 1983). The use of a scenario-based situation and open-ended, semi-structured interview was previously used to draw insights on how educators think on their feet and respond (Bond, 2011). Thus, this vignette provides insight to the thought process of expert teachers, as "… competent practitioners usually know more than they can say … they exhibit a kind of knowing-in-practice, most of which is tacit" (Schön, 1983, p. 7). Teachers' responses to the four given options would also suggest if they were controlling or autonomous in their feedback approach. This is important because teachers' level autonomy during

feedback is important in promoting learning (Hargreaves, 2014). Examples of interview questions include; "What went through your mind as you thought about what you would say to Jim, and how would you respond to him?", and "Can you share reasons for your responses?".

The second part of the interview focussed solely on teachers' self-efficacy for instructional strategies, informed partially by Tschannen-Moran and Woolfolk Hoy (2001), as other dimensions were beyond the scope of this research. Interview questions focused on exploring expert teachers' behaviours, outcomes, self-efficacy, and barriers in two-way feedback interaction through RI. Respectful Inquiry was defined for teachers as dialogue through question asking, open questions, and non-verbal behaviours that might be useful during two-way feedback interaction' (Tan et al., 2018). Alongside a brief definition of Respectful Inquiry, interview questions included, "What does Respectful Inquiry (RI) look like for you in the context of two-way feedback?", "To what extent can you provide two-way feedback through RI when students are confused?", and "How well can you implement two-way feedback through RI in your classroom?". To explore teachers' self-efficacy and barriers in RI, sample questions include, "How confident and effective are you at using two-way feedback through RI to facilitate student learning?" and "What barriers might prevent you from using two-way feedback through RI?"

2.3. Procedures

With permission and approval from the first author's university Human Research Ethics Board, expert teachers identified from previous research (Tan et al., 2018) were invited to participate in a one-on-one 60 min interview. The study's purpose, procedures, benefits, risks and process gates to verify expert teacher status through their line manager or deputy principal were detailed in writing. Participation was voluntary, with anonymity assured. Participants could withdraw at any time, without pursuit of reasons.

Expert teacher gates and competencies (Hattie, 2003; Palmer et al., 2005) were verified by the lead researcher either through confidential reply email, or face-to-face with the teacher's self-identified line managers (direct Head of Department or the Deputy Principal). Interviews were audio-recorded using a handheld voice recorder and participants could seek clarification where needed. At the beginning and end of each interview, confidentiality of personal information and anonymity was reiterated.

To ensure trustworthiness of data, interview responses were paraphrased to ascertain accuracy of understanding. Interviews were transcribed verbatim, data analysed inductively, and coded according to themes (Lincoln & Guba, 1985). Repeated reading and listening of audio-recordings helped ensure clarity of content prior to subsequent analysis (Creswell, 2003). Cluster of meaning units were utilised in theme development (Braun & Clarke, 2006). These units contained conceptually relevant information, represented by phrases, words, letters, sentences (Robson, 1993) or a paragraph containing conceptually relevant information. To ensure authenticity, integrity, and credibility, direct quotations have been coded thematically (Whittemore, Chase, & Mandle, 2001) and presented in the results section.

Coding sheets were cross validated (Burns, 1997), with initial coding and themes examined (Patton, 1990) by two academic university researchers. Meaning units were cross-checked for theme consistency. Where differences prevailed, revisions were made to ensure appropriate fit of meaning units to the identified themes. An initial 90% agreement was reached between independent coders. Upon further refinement, consensus was reached regarding concepts and themes (Boeije, 2010) after two rounds of independent coding (Schreier, 2012).

3. Results

Nine one-on-one interviews resulted in 136 pages of 11-point, single-spaced transcribed text. A total of 147 meaning units were recorded and grouped into 4 tables. Themes were categorised according to RI (Tan et al., 2018) and barriers to two-way feedback interaction. The frequency of meaning units provide awareness of recurring themes; they are present for illustrative purposes and do not imply degree of importance (Sparks et al., 2015). To protect teacher anonymity, pseudonyms have been given to teacher participants.

3.1. Expert teachers' two-way feedback behaviours through RI

Expert teachers' RI behaviours in two-way feedback have been summarised in Table 1. Three original RI attributes were confirmed (i.e., question asking, question openness, attentive listening), and three additional themes were identified; appraisal respect (Darwall, 1977), recognition respect (Darwall, 1977; Dillon, 2007), and a safe learning space (Fassinger, 1995; Latting, 1990).

The first theme, question asking, was evidenced by expert teachers who reported how they would invite student answers through two-way feedback interaction. For example, "Is there anything you don't understand well and the mark you got?" (Fumiko, all-girls). The second theme, question openness, defined as questions that demonstrate a genuine interest in opinions, was evidenced through examples identified by expert teachers'. For instance, "What do you think?" (Grace, all-girls) and "Why is this something we need to consider?" (Fumiko, all-girls).

The presence of these two themes, question asking and question openness remained consistent in teachers' response to the scenario-based vignette (Table 2). For instance, "I would ask him (the student) if he is enjoying class … based on his response, I would then work towards asking him which part or why he didn't enjoy class … how can I support him in doing his assignment …" (Audrey, co-ed). Another example includes, "Can you explain to me your response?..What can I do to help you?" (Fumiko, all-girls).

The third theme in RI behaviours (non-verbal) was attentive listening, where expert teacher behaviours conveyed active listening during two-way feedback interaction. These include eye-contact, head nods, and appropriate facial expressions such as smiles. For instance, "a level of warmth, level of eye contact, a level of interest" (Audrey, co-ed), and "With me, its lots of smiling, lots of nodding …. showing that you're engaged" (Chloe, co-ed).

The fourth, fifth, and sixth themes were previously unrecorded (Tan et al., 2018), but identified by expert teachers as foundational in promoting two-way feedback interaction through RI. They are appraisal feedback, recognition feedback (Darwall, 1977; Dillon, 2007), and a safe learning space (Fassinger, 1995; Latting, 1990). An example of appraisal feedback, which is defined as the positive appraisal of others (Darwall, 1977; Dillion, 2007), includes; "… we were talking about a character, and why the character was represented like they were. And a girl gave an answer … that was really quite different, and so I just said to her – 'Look … I never even thought of that, or considered that. Could you tell me, why you've come to that conclusion, or why you think that?' … Oh she was excited! I think she was excited because I said I hadn't thought about that-you know, I know something that the teacher doesn't! (laughs) And I think that's about showing respect, about showing

Table 1
Expert teachers' RI behaviours during two-way feedback interaction.

Theme	Definition	Exemplar Meaning Unit
Asking questions (6)	Examples of teachers' effort in asking questions so as to invite an answer.	"… it's questions that seek students' thoughts and perceptions or information" (Audrey, co-ed).
Question openness (20)	Examples of teacher questions that show a genuine interest in student opinion.	"… for me, I try to keep it as open as possible, and not specify what I want out of it, or what the end goal is. Here's a scenario or here's a situation … what comes to mind? What do you think about that?" (Bryan, co-ed).
Attentive listening (11)	Examples of teacher behaviour that demonstrates adequate eye contact and appropriate facial expressions or head movements.	"… nodding, smiling … and I think even showing that you're thinking about things" (Fumiko, co-ed).
Appraisal respect (4)	Appraisal respect involves positive appraisal of others.	"I would string all of their responses together so when we got to the end, I strung all their responses together and as I said each part, that belonged to each student, I pointed to them. I just said it continuously, but they owned their part, and I guess it's an approach that I do use quite often too, as I congratulate them on their response" (Grace, all-girls).
Recognition respect (5)	Recognition respect is the disposition of giving weight to an individual, taking the person seriously as that presented self, in a specific role within a social context, and according moral worth.	"Waiting, acknowledging them by name that's really important" (Hannah, all-girls).
Safe learning space (5)	A safe learning space characterised by teacher behaviours which are non-judgemental, approachable, supportive, and welcoming of discussion.	"… asking students questions … not bringing them emotional discomfort.…yeah, it's the safety" (Isaiah, co-ed).

them that hey, I value your opinion and I value what you've got to offer to the class, and then I guess you know it's asking them to reveal how they came to that, or the process that allowed them to come to that conclusion. (Chloe, co-ed)

Recognition respect (Darwall, 1977; Dillon, 2007), defined as the disposition of giving weight to an individual, taking the person seriously as that presented self and according moral worth, was highlighted as key in two-way feedback interaction. For example, "… mention their name first (before asking them the question) … that will make them (students) feel valued, important, and that what they (students) are going to say is important and valued … it is about that relationship" (Fumiko, all-girls).

The sixth theme of a safe learning space, characterised by teacher behaviours which are non-judgemental, approachable, supportive, and welcoming of discussion (Latting, 1990; Fassinger, 1995). For instance;

> "… it is done in a way that is positive, it's safe … providing an environment where kids want to think about thinking and want to learn … an environment where it is safe to do it and it's promoted" (Bryan, co-ed).

Expert teachers' commentary through the vignette further supports this theme through one-on-one communication (Table 2). For example, "… what I'd do – talk to him in private, showing the student that hey, I am worried about you and I have noticed these things … we do need to do something to get you out of this situation" (Chloe, co-ed).

In addition, teachers' effort in ensuring sustained care and support (Table 2) for students was also expressed. For example,

> "… to get support from say a college counsellor for example, or … a tutor teacher, or from a range of different teachers … they (students) are quite open to getting that level of support so I am confident that an approach like that – that sees students have input, and not just to be told by the teacher, 'you should be doing this' … but more so to realise that there is someone there that cares about how you're going … is interested in you and will keep checking in and following up" (Audrey, co-ed).

3.2. Expert teachers' perceived outcomes of two-way feedback interaction through RI

Expert teachers described the role of RI during two-way feedback interaction. Three themes were derived; knowledge of cognition, regulation of cognition, and feedforward information (Table 3).

The first theme, knowledge of cognition, relates to the development of students' awareness of their thinking. For example, a teacher described how it served to elicit deeper learning from students during two-way feedback interaction;

> "… feedback is a bit of one-way … whereas with the questioning (in two-way feedback), you can hit more … deeper learning … at

Table 2
Two-way feedback interaction (Scenario-based vignette).

Theme	Definition	Exemplar Meaning Unit
Relatedness support through caring behaviours (20)	Teacher responding to class events in a way that demonstrates a level of caring or that the teacher is concerned with the students' well-being.	"Firstly I'd just check in with him, I'd start with –'Are you okay? I've noticed that … your approach to class has changed a little bit lately.' I'd probably ask first if there's anything that he didn't understand, or maybe if there was something that he wasn't happy with. My first approach would be the care-approach … I want to make sure that he is alright" (Grace, all-girls).
Relatedness support through individualised conversations (9)	Direct commentary provided by the teacher that is individualised and unique to the student; showing deeper understanding and apparent interest in the student outside of the task at hand.	"I would probably ask him to have a chat with me, so I would ask him to wait behind after class, or I'd ask him to come see me at lunch time, and it would just be a one-on-one discussion" (Grace, all-girls).
Teachers' help seeking behaviours to support students (9)	Teacher commentary of support seeking behaviours from other members of staff to help students in need.	"I would … chat to other staff in other learning areas and say, look – I've had Jim for the last two weeks in soccer and he seems really distant or listless … have you noticed anything in English or Science? Or see his tutor teacher or his Head of House, is there something going on, or something we should know about. So just trying to get a few facts from others" (Bryan, co-ed).
Asking questions (9)	Examples of teachers' effort in asking questions so as to invite an answer.	"I have seen that things haven't quite been working. Is there something going on that I can help you with?" (Hannah, all-girls).
Open-ended questions (6)	Examples of teacher questions that are perceived to show a genuine interest in finding out more about students' opinion.	"… I'd be encouraging them, 'what is it that I can do that will make that so much easier?'" (Hannah, all-girls).

Table 3
Expert teachers' perceived outcomes of two-way feedback interaction through RI.

Theme	Definition	Exemplar Meaning Unit
Metacognition (awareness of cognition) (5)	Teacher commentary that RI facilitates students' awareness of cognitive processes.	"I'm trying to get the students to think about what we are doing, rather than just be spoon-fed … not squashing any answers that are wrong, but just trying to get them to think …" (Bryan, co-ed).
Metacognition (regulation of cognition)(6)	Teacher commentary that RI facilitates student cognitive regulation to enable improved outcomes.	"I think if you are positive in the way you ask questions … I think it (RI) makes them more aware of what they are doing. More of their learning and how they are going about certain tasks which allow them to regulate what they are doing better" (Eloise, co-ed).
Feedforward information to teachers (3)	Teacher commentary on how RI provides feedforward information on students' current learning.	"… my questions … try work out two things: to push them, but also for me to work out whether they truly understand where we are going" (Hannah, all-girls).

a different level of learning there. You've got the skills now and you got the knowledge behind them, what about these things now?" (Danna, co-ed).

The second theme, regulation of cognition, relates to one's ability to adapt cognitive processes in order to achieve improved outcomes (Flavell, 1987). For example, expert teacher commentary explains how this occurs through verbal behaviours in RI;

"… if I'm asking them (students) those questions …. they could then ask themselves those questions. If they are getting examples like … 'How did that work for you? How is this going?', they could then look at their own work and say 'How is this going for me?' … So I think that can help them to self-regulate. I think it can also help them to understand what it is they want to achieve and to set their own ways of achieving what they want … and how they are going to achieve it" (Audrey, co-ed).

The final theme, feedforward information, was reported by expert teachers for its utility in checking for understanding. Teacher commentary included;

"I do authentically value what they (students) are saying and I think … when I am inviting their opinions, I am also able to start to assess where they're at and what level of insight they are able to give. And that's also like a form of assessing as well …" (Grace, all-girls).

3.3. Expert teachers' self-efficacy of two-way feedback interaction through RI

Self-efficacy ratings for two-way feedback interaction through RI remained consistently high among expert teachers' self-report (from a scale of 1–10, with 10 being the highest rating). That is, all expert teachers scored themselves between '7' and '9' out of '10'. Examples of expert teachers' high self-efficacy commentary included;

"I feel I am quite effective at it (two-way feedback) … I think learning is a process, I think that's quite important. I would say an '8' or '9'. I feel quite confident" (Chloe, co-ed).

"I'm very confident in getting them (students) to see their own ability and being able to reinforce their strengths and help them work through … I'll say an '8' … my feedback is very in-depth …" (Audrey, co-ed).

"Very confident, a '9'. So deep learning versus surface learning … (For example) … that is a good response … can you think about how that can be broken down further?" (Fumiko, all-girls).

3.4. Expert teachers' perceived barriers to two-way feedback interaction

Three themes were identified by expert teachers as barriers to two-way feedback interaction (Table 4). These include: time, curriculum, and class size. First, the time barrier was opined as a major hindrance in two-way feedback interaction. Examples include; "it's the time factor … trying to sit down with every single one of them and go through it" (ET8, F, all-girls), and "Time. It is really time consuming" (Fumiko, all-girls).

Second, the heavy curriculum workload was reported as another barrier to two-way feedback interaction. For instance, "… a very tight curriculum … I think that barrier in terms of what most teachers say they feel under pressure to get through the content … that can stop you" (Hannah, all-girls).

Third, class size was considered a key barrier by expert teachers. An example of teacher commentary reports; "… the number of kids in a class … having 30 or more, it's difficult to have that with every single kid. That's challenging" (Audrey, co-ed).

4. Discussion and conclusion

This study explored expert teacher perceptions of two-way feedback interaction through RI (Tan et al., 2018). The behaviours, teacher self-efficacy in the behaviors, outcomes, and barriers of two-way feedback interaction were investigated. While recent research has suggested that effective teachers enact two-way feedback interaction through RI (Tan et al., 2018), only student perceptions were reported, and expert teacher perceptions remain unknown. Substantial research has recommended two-way feedback over unilateral feedback (Ajjawi & Boud, 2017; Boud & Molloy, 2013) as it facilitates higher learning outcomes for students (Tan

Table 4
Expert teachers' perceptions of barriers to two-way feedback interaction.

Theme	Definition	Exemplar Meaning Unit
Time (9)	Teacher commentary that the lack of time prevents two-way feedback.	"… time would be a big thing … we are always time-poor, and I would love to give my students more feedback, but we're only one person" (Chloe, co-ed).
Curriculum (5)	Teacher commentary that heavy curriculum content may prevent two-way feedback in class.	"Getting through work … a heavy content-laden course, that can be challenging and sometimes just needing to get on with it" (Audrey, co-ed).
Class size (6)	Teacher commentary that class size can be a potential barrier to two-way feedback.	"Class size does affect that … if you've got a really big class, then sometimes it's hard to get that one-on-one feedback situation, but it's not impossible, you'd just have to work a bit harder for it" (Hannah, all-girls).

et al., 2018). Importantly, this study seeks to verify previous work (Tan et al., 2018) and offers a new lens through expert teacher perspectives, on the utility of two-way feedback interaction, the perceived barriers that thwart its implementation, and teachers' self-efficacy in this regard.

The methodology used in this study was exploratory, which allowed expert teachers to articulate more descriptively in greater detail, the dynamics of teacher behaviours which augment higher learning outcomes for students during two-way feedback interaction through RI. Analyses identified six facilitative behaviours.

Findings confirm that expert teachers engage in RI behaviours during two-way feedback interaction to promote metacognition (Tan et al., 2018). The use of question asking, question openness, and attentive listening not only models for students how they can independently monitor and evaluate their own work, it also stimulates their thinking, raises self-awareness, and promotes agency in self-regulation. While this study concurs with recent work (Tan et al., 2018), three new factors were identified, a safe learning space (Latting, 1990; Fassinger, 1995), recognition respect (Darwall, 1977; Dillon, 2007) and appraisal respect (Darwall, 1977). Though previously unreported (Tan et al., 2018), we argue that they provide greater clarity in explicating how expert teachers' feedback behaviours, as defined by RI, serve to facilitate psychological needs through relatedness support (Sparks et al., 2015; Cox & Williams, 2008), competence support (Jang et al., 2010; Reeve, 2006; Sierens et al., 2009) and autonomy support (Kiemer et al., 2018; Su & Reeve, 2011). These results are consistent with literature that meaningful teacher-student relationships promote relatedness and enhance learning environments (Wang, 2009; Furrer & Skinner, 2003; McAllister & Irvine, 2002).

While these results are in agreement with literature that report dialogue in feedback activates students' cognitive awareness and develops their self-assessment capabilities (Carless et al., 2011; Mulliner & Tucker, 2017; Tan et al., 2018; Winstone et al., 2017), this work explicates in greater detail, the associated verbal and non-verbal teacher behaviours that facilitate such higher order learning outcomes. Furthermore, this work underscores the importance of social interaction through co-construction of meaning (Vgotsky, 1978), facilitated by the fulfilment of psychological needs support that augments learning (Jang et al., 2010; Tan et al., 2018).

In addition, expert teachers' self-assessed rating of self-efficacy in two-way feedback interaction remained consistently high. This supports previous research (Guo et al., 2014; Rimm-Kaufman & Sawyer, 2004; Son et al., 2016) that high teacher self-efficacy impacts students' learning outcomes through positive classroom environments, characterised by supportive and learner-centred approaches (Guo, McDonald Connor, Yang, Roehring, & Morrison, 2012; Temiz & Topcu, 2013). However, as self-efficacy is a personal judgement which relates to perception (Woolfolk Hoy & Burke-Spero, 2005) rather than objective performances (Usher & Pajares, 2008), empirical research on expert teachers' effectiveness in two-way feedback interaction through RI will be necessary to corroborate findings.

Lastly, while two-way feedback interaction was acknowledged by expert teachers as highly desirable, it was significantly thwarted by time pressures, the crowded curriculum, and class size. Barriers of time, heavy curriculum, and class size identified by expert teachers in two-way feedback interaction resonates with existing educational literature that these impact quality teaching (Chin, 2006; Fitzgerald et al., 2016; Rink, 2013). Despite evidence-based literature that highlight the persistence of such teaching barriers, unless schools review the crowded curriculum and prioritize time for two-way feedback interaction, this may insidiously thwart teachers' pursuit of quality two-way feedback and the associated autonomously-regulated and higher order student learning outcomes.

In summary, this work adds important detail and extends our understanding of how teachers perceive metacognition may be facilitated through two-way feedback interaction. Moreover, this work reinforces the importance of previously reported RI behaviours; asking questions, open questions, active listening (Tan et al., 2018), and it also identifies the unreported aspects salient in two-way feedback interaction such as a safe learning space, recognition respect, and appraisal respect in two-way feedback interaction. Collectively, these behaviours are suggested to enhance learning, nurture relatedness supportive needs satisfaction and develop self-regulatory behaviours. However, further work through observation is necessary to ascertain that teachers execute these behaviours as described. These results also support scholarly work that teachers with high self-efficacy perceive themselves as having the capacity to positively impact learning (Thoonen, Sleegers, Oort, Peetsma, & Geijsel, 2011). In advancing previous work (Tan et al., 2018), we have also confirmed that expert teachers' high self-efficacy and two-way feedback interaction through RI (Tan et al., 2018) provides a strong architectural foundation for quality teaching and learning. Consistent with others (Dixon, 2011), expert teachers acknowledged that two-way feedback practices are deliberate, intentional and indeed effortful. We hope the findings of this work will inform future classroom studies, teacher-education, and professional development programmes to explicitly teach two-way feedback interaction so as to enrich student learning outcomes.

4.1. Limitations and future research

We acknowledge that this study is not without limitations. The use of face-to-face interviews can elicit self-perceived biases and the effect of social desirability (Nederhof, 2006). While the strength of this study lies in the focussed sample of verified expert teachers, the relatively small sample size ($N = 9$) and low diversity in terms of subject area limit its generalisability. Hence, findings from this study need to be interpreted with caution and not be generalized beyond this context. As this study involved expert teachers' self-reports on RI behaviours in the context of providing feedback, it remains to be seen if empirical studies corroborate expert teachers' classroom feedback behaviours and the subsequent impact on student learning.

Five recommendations are proposed for future research. First, further understanding could be gleaned from direct observation of high school, expert teachers' classroom two-way feedback interaction behaviours, with the investigation of teachers' self-efficacy and student learning outcomes such as metacognition, self-efficacy and motivation. Second, an intervention study highlighting two-way feedback interaction and RI behaviours could be explored among expert teachers, more experienced teachers and early-career teachers. Comparisons of quality, frequency, impact on student learning outcomes and teachers' self-efficacy levels could provide useful data to supplement knowledge in this area. Third, with the validation of the above suggested studies, the development of a two-way feedback questionnaire for students and/or observation instrument of classroom practice, underpinned by RI and specific to the educational context, could provide rich possibilities. Fourth, given the different learning contexts of traditional academic class settings such as science or mathematics (STEM), and that of non-academic subjects such as physical education, comparison of two-way feedback interaction through RI and its frequency may produce subject-specific outcomes. In addition, further research is needed to confirm the relative ease or opportunity to provide RI-related, two-way feedback interaction in different disciplines. Fifth, correlation studies could explore the strength and

effect of RI and two-way feedback interaction in different cross-cultural settings, among different school-age groups, from primary to high school.

4.2. Practical implications

These findings confirm past work (Tan et al., 2018) that expert teachers seem thoughtful and conscious in using RI during feedback. In order to promote the efficacy and optimization of two-way feedback, attention to the six RI elements (asking questions, open questions, attentive listening, appraisal respect, recognition respect and a safe learning space) appear pivotal to improve student learning opportunities.

This study provides substantial practical utility for educators and school administrators to consider. For sustainable, quality teaching and learning, it is imperative that schools continually adapt to support teachers' two-way feedback interaction in the classroom. The congested curriculum needs review to facilitate opportunity for more inquiry-related feedback in order to optimise student learning outcomes. That is – reducing course content quantity will facilitate a return of diminished teaching and learning quality. In addition, teachers may require additional professional development to build new understandings of inquiry-related feedback and its implementation. While this study affords a springboard for future feedback intervention programs, and future observations are needful to further our knowledge of these expert-level teaching strategies.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.tate.2019.102930.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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