The Scholarship of Teaching and Learning Critical Thinking:
Finding a Way Forward with Evidence from a Medical Teaching Context

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The scholarship of teaching and learning (SoTL) in higher education has a deep- seated concern with developing critical thinking, now a common learning outcome and desired graduate attribute. The prolific inquiry into what critical thinking might be has, however, resulted in a complex literature, with multiple definitions used both explicitly, and implicitly, in practice. Unfortunately, this lack of shared meaning creates barriers for those who need to develop thinking in the classroom. In a year-long action research project, six teacher participants developed a three-part strategy to overcome these barriers in undergraduate small group medical teaching. Iterative thematic data analysis revealed how teachers 1. avoided using the term 'critical thinking,' 2. used short phrases to identify types of thinking desired, 3. offered students guidance in 'thinking language.' Findings are supported by literature, adding the idea that currently, avoiding use of the term 'critical thinking' might better enhance students' thinking development.

INTRODUCTION
In higher education, the scholarship of teaching and learning (SoTL) has a deep seated, historic concern with critical thinking. Critical thinking continues to be highly valued and is frequently cited as a desired learning outcome and graduate attribute, also understood as foundational to what makes an education 'higher' (Barnett, 1997; Harland, 2020). Consequently, thinking critically is also vital to the development of knowledge and practice around the SoTL upon which we rely.

However, we seem to have reached a situation in which the main SoTL players, the teachers and learners who need to develop thinking in the classroom, may struggle to do so. Issues related to critical thinking nomenclature have resulted in a progressive lack of shared meaning that now, for many, significantly impacts their practice. The practice of developing thinking as an educational goal is being undermined.

Lack of shared meaning has several potential contributory factors. Of these, the lack of consensus around critical thinking definition seems the most substantial; multiple, often conflicting or complex definitions are proposed in the literature and used in practice. 'Critical thinking' might entail a singular thinking process, a group of processes, an attitude to thinking, a characteristic of thinking (more likely the thinker; Harland, 2020), in endless combinations (Blakey, 2016; Harland, 2020). While Facione (1990, the Delphi Report) illustrates *some* consensus among expert researchers, the wider literature is yet to reach such a position (Browne & Freeman, 2000; Moore, 2013; Davies, 2015; Golding, et al, 2018). Currently, the term 'critical thinking' might represent any of an exceptionally diverse group of ideas. Davies illustrates this situation thus, also adding an idea about the purpose of thinking – that it might have an element of 'ethics':

> 'Critical thinking in higher education' is a phrase that means different things to many people… Does it mean a propensity for finding fault? Does it refer to an analytical method? Does it mean an ethical attitude or a disposition? (2015, p. 41)

Similarly, Willingham on the potential complexity of some definitions of critical thinking:

> . . . critical thinking consists of seeing both sides of an issue, being open to new evidence that confirms your ideas, reasoning dispassionately, demanding that claims be backed by evidence, deducing and inferring conclusions from available facts, solving problems, and so forth. (Willingham, 2007, p. 8)

A second issue precluding a shared meaning of critical thinking is essentially about marketing. Moon (2008) notes that the word 'critical' has become fashionable, at times joined with words such as 'appraisal,' ostensibly to lend a legitimate or academic air to a diverse range of ideas, publications and programmes - or perhaps to be seen as 'part of the current conversation.' We note similar phenomena in commerce, by which words are passed about with little apparent consideration for relevance, e.g. the phrase 'deep dive into data,' initially used as a descriptor for in-depth analysis (Horwath, 2009) but now used to represent many different processes. In summary, many potential definitions are thus added to anyone's understanding of 'critical thinking' and further complicated by a potential lack of utility or efficacy (Tucker, 1996; Moon 2008).

Another important contributor to current issues around shared understanding of critical thinking is about being explicit with one's chosen definition. Authors describe how many institutions avoid making such definitions explicit, even within a single degree programme (Browne & Freeman, 2000, Davies, 2015), as do many teachers within them (Harland, 2020). Harland summarises the importance of this issue:

> A shared understanding is important…because each lecturer will need to know, within their subject specialism, the characteristics, values, skills and dispositions of a critical thinker, how to build it into teaching, curricula and assessment, and then actively encourage these dispositions in students (Harland, 2020, p. 112).

Harland (2020) notes a further complication around 'being explicit' - that some teachers might implicitly 'know' what they mean by critical thinking and can identify it when seen or heard, but are unable to describe it to learners. While such issues may relate to a teacher's own understanding, or teaching skill (e.g. ability to communicate), Harland suggests this issue might, in part, be social – a general failure to discuss, agree on, or challenge, what exactly we mean when we say we want to develop 'critical thinking.'

Several wider ranging factors potentially contribute to the lack of shared meaning around critical thinking. For example, some suggest a general failure to sufficiently critique what is *required* from critical thinking, thus holding up the development of ideas about what it might *be* (Barnett, 1990; 1997; Davies 2015). Also, that in education there is a general propensity to refer and defer to critical thinking as an idea, with a concomitant failure to implement teaching methods by which it might best be developed (Harland, 2012). In the classroom, too, teachers are criticised for neglecting to sufficiently guide learners in how thinking might be operationalised into words or speech (Golding, 2011).

Some students will develop their thinking despite these various challenges (Biggs & Tang, 2011). However, any factors described here might prevent others from so doing. Ultimately, many will likely fail to achieve the learning outcomes set for them and leave higher education without the attributes we desire.

Meanwhile, in some contexts, teaching methods which aim to cultivate critical thinking (however conceptualised) are becoming more common (Golding, 2011; Vardi, 2013) including medicine (Cruess, et al, 2010; Huang, et al, 2011; Wilson & Cunningham, 2013). Many such methods are hard-won because they are logistically and financially demanding. Without further action, current issues in developing thinking are likely to continue and these valuable resources essentially wasted - not to mention the potential effects on students' epistemic development or what they implicitly learn about education as a result (Burbules, 2008).

The problem addressed here is not whether consensus defining critical thinking *can* be found – this is theoretically possible. Neither is it an ethical discussion about using the term 'critical' to market products, or the relative value of each thinking definition. The problem investigated here is the lack of shared meaning of the term 'critical thinking,' resultant challenges, and a consequent undermining of our aims in higher education, the SoTL field, and ultimately, student learning.

METHOD
Research aims and context
Consistent with one core purpose of SoTL (Geertsma, 2016), we selected methods allowing us to:

- explore the problem of developing thinking where a curriculum demands students learn critical thinking, and teachers have resources to do so but these main protagonists lack a shared definition of it
- use the combined minds of expert medical teachers to strategically overcome the many issues described here, in an undergraduate medical education small group context
- gather data about how this was done
- improve learning for medical students in the small group classroom, and ultimately, professional practice.

Action research (AR) is well suited to SoTL issues, especially day to day, practical, classroom level problems (Norton, 2009; see also Delany, et al, 2013; Delany & Golding, 2014). AR also allows the identification of research questions different to, lateral to or more specific than those posed at its outset (Zuber-Skerritt, 1993; Dewar & Sharp, 2006; McNiff & Whitehead, 2006). Importantly for this study, AR allows participants to critique and investigate their own practice, combining research with professional learning and the development of classroom practice (Crow, et al, 2006; Cohen, et al, 2007; Trevitt, 2008; Weurlander & Stenfors-Hayes, 2008). Team-based AR, as we used, also allows practitioners to become a group of mutually inquiring, supportive practitioners (Trevitt, 2008).

Empirically, AR's value lies in its opportunities to elicit rich, in-depth, longitudinal data (Ritchie, et al, 2013), in iterative cycles of 'developing, trialling, evaluating and refining' (Delany & Golding, 2014, p. 7) method(s) or concept(s) (Zuber-Skerritt, 1993; Herr & Anderson, 2015). Our participants were six medical teachers, including the first author/researcher. This small sample (size is often moot in qualitative research) offered the researcher opportunity to develop effective relationships with all participants and effectively generate data over one academic year.

As part of a year-long wider project, our participants developed, tested and evaluated potential solutions to the following question:

> **How might we better cultivate medical students' thinking in the small group setting where major stakeholders lack a shared definition of critical thinking?**

Participants were purposively selected as highly experienced medical educators interested in cultivating critical thinking in small groups, happy to research ways to develop their own practice. Each had at least eight years' experience working with small groups of students in medical undergraduate teaching (~10 students per class) and taught several such groups per week. All classes contributed to the second or third year of a six-year medical degree with an overall stated graduate attribute, as well as several learning objectives, requiring that students develop as critical thinkers. Because the curriculum was a spiral one (see Harden & Stamper, 1998), and teachers worked in students' early academic years, engaging students in thinking was a primary goal which could significantly influence students' academic achievement and developing professional practice.

To ensure confidentiality we withhold detailed data about locality and participant demographics. Data are presented as quotes from Lance, Jane, John and Eleanor (pseudonyms), with summaries from the wider group of six where appropriate.

Over the year, teacher-participants undertook multiple iterations of the AR cycle, working both independently and in collaboration. They 1) reflected on how to cultivate student thinking; 2) identified barriers or difficulties to doing so; 3) developed teaching strategies for addressing barriers; 4) tested teaching strategies by trialling them in practice; 5) used observation and personal judgement to evaluate the effectiveness of each strategy; 6) refined strategies in response to evaluation and began the cycle again from 1.

Data were included individual semi-structured interviews about teachers' practices at the project's outset and conclusion, observations and video recordings of teaching, audio recordings

of ten monthly discussion meetings at which teaching strategies were discussed and evaluated for effectiveness, and teachers' reflective journals in which they recorded strategies they had tried and outcomes, and how their students were progressing. All group discussions were facilitated and recorded by the researcher and video recordings of teaching were analysed using an Interpersonal Process Recall (IPR) process (Kagan, et al, 1969). This methods allows a teacher to reflect in depth on their classroom practice and help them develop and express their rationale, a rare and valuable opportunity for many (Moore, 2013).

We used iterative content analysis (Downe-Wamboldt, 1992; Liamputtong, 2009) to summarise and develop themes from data. To ensure accuracy of interpretation, each theme was critiqued and refined via discussion with participants at monthly research meetings. This article reports three interrelated emergent themes/teaching strategies isolated from the substantial, complex data set. Together, strategies enhanced the cultivation of medical students' thinking in small group teaching. While student data were not directly gathered during this research, we include relevant proxy reports from teacher-participants.

RESULTS
Our teacher-participants ('teachers' hereon) worked within a medical curriculum with 'critical thinking' as a desired graduate attribute and an institution-wide teaching and learning strategy stating 'developing critical thinking' as an important aim. Course documents used by teachers in the study (e.g. student workbooks) also referenced 'critical thinking,' reflective thinking, reasoning and lateral thinking as learning outcomes, in various combinations.

Expression of general concern
At the project outset, teachers reported several concerns about the lack of shared meaning of the term 'critical thinking' in the broader academic literature and between stakeholders in their educational institution. Broadly, their main worry was about teaching to develop students' critical thinking in such a situation. Lance expressed his views about this:

> …and look what's happened when everyone 'up there' [academics] tries to define it. They get nowhere. It's probably best to leave it now, it's a mess [the debate about what critical thinking is]. (Lance, monthly discussion meeting)

Similarly, Eleanor described how, to her, the term critical thinking had become:

> …distracting and useless and doesn't tell anyone [teachers or students] **anything** [about what needed to be taught or learned, her emphasis]. (Eleanor, monthly research meeting)

As time went on, concerns were levied at issues within teachers' 'SoTL spaces,' which compromised their mandate to develop students' critical thinking. Teachers also drew attention to the fact that they had many resources appropriate to developing student thinking (small groups, active learning processes) but further guidance in terms of preferred definition - and therefore the specific, necessary pedagogic advice - was absent. This absence was felt keenly, across the board and not limited to the current program or institution: all teachers reported having had similar experiences on other programs, and in other institutions, for some years. To some, developing critical thinking had 'always been problematic – nobody seems to want to take it on [as something to solve]' (John, first research meeting).

Teachers also expressed concern that their positioning in the institutional hierarchy also rendered many possible improvements outside their remit, such as developing or adopting a specific institutional definition of critical thinking or using alternative words in learning outcomes. So, in many ways, teachers' 'hands were tied.'

> [a solution in terms of a definition of critical thinking is] … out of the reach of teachers like us. It's a mess, and we don't get much say in what gets written for attributes and things like that. (Lance, discussion in research group, early in the research)

Specific concerns
Teachers reported several more specific concerns related to the lack of shared definition of critical thinking, all around teaching practice and students' learning outcomes. For example, Jane was concerned that her students might not understand when–or whether–they had genuinely achieved a required learning outcome; a teacher and student without a shared meaning of critical thinking might disagree on whether they had learned to think critically. Or, a student may think that being logical in their thinking may be required, but the teacher actually wish for them to reflect. John and Jane discuss this issue:

> **Jane**: … a student would think, 'I'm doing critical thinking!'… So we've got to be very clear about what we mean…otherwise none of them will know how to do it [to think etc.] There's lots of talking about it … lots of talking about it but actually…
>
> **John:** We all use the words ['critical thinking'] to mean different things
>
> **Jane:**… you could be doing one thing and I could be doing another
>
> **John**: And we both call it critical thinking.
>
> (John & Jane, teacher interview).

Table 1 contains a summary of issues raised and discussed by teachers throughout this research, related to a lack of shared meaning of critical thinking:

On the basis of these many issues, teachers moved on to identify, develop and test solutions to their issues in the SoTL spaces in which they had power to act. Teachers co-developed a three-part solution effectively bypassing current difficulties around cultivating medical student thinking. Solutions were a response to lack of external and internal guidance but essentially prudential, because teaching time is valuable and an inappropriate forum to discuss critical thinking definition in depth - say, where aiming for a shared view.

Lack of shared meaning found between, or around	Where lack of shared meaning encountered	Issue resulting	Possible outcome/s
Those in the general academic debate	Academic literature	Numerous definitions of critical thinking	Guidance for teachers developing learner thinking in the classroom may not be easy to find or specific to purpose
Groups in educational settings determining graduate attributes, teaching and learning plans & teachers in practice	Term used in graduate attributes & teaching and learning plans, teaching practice in the classroom	Term used without further guidance Term used for kudos, perhaps as a 'gold star'	Teachers interpret the term 'critical thinking' differently & aim for different things Guidance for teachers developing learner thinking in the classroom may not be provided Learning opportunities may be lost
Different teachers	Meetings, staff development opportunities, casual discussions	Sociological difficulties developing useful conversations about critical thinking	Teachers fear skills lacking, e.g.: understanding or teaching to develop critical thinking, and dissuaded from developing practice or a shared view One teacher may stifle another's views
Teachers & students	Term used in teaching practice in the classroom, learning outcomes, assessments	The term 'critical thinking' used as is might be unclear to students Teacher holding a tacit meaning may be unable to specify exactly what they want students to learn or do	Each might think they have achieved it, but not Each teacher might aim for different things Student learning inconsistent across cohort Students fail to achieve learning outcomes, e.g. developing thinking Students may view 'unclear' teaching methods negatively and fail to engage

Table 1: **Examples of a lack of shared meaning of critical thinking causing negative outcomes in teaching and learning practice**

Strategy part 1: Avoid using the term 'critical thinking' in SoTL spaces

So, what *exactly* did teachers do, and why? The first theme identified was a practical response to one issue identified above, as Lance [above] noted – let's 'leave it now.' Teachers found they could avoid the distracting confusion about how 'critical thinking' might be defined, and better develop student thinking in the classroom (and ultimately outside of it), by avoiding use of the term in and around SoTL spaces.

Specifically, teachers avoided the term when explaining overall teaching aims, desired learning outcomes and when offering feedback on students' written work – and in related discussions with colleagues. This ploy released teachers to devote their time to fostering clearer aspects of student thinking requisite to health professional development and to feel better equipped for important educational tasks.

However, teachers reported some remaining frustrations. They would have preferred to remove the term 'critical thinking' from all formal documents (student workbooks, course descriptors, etc.), but felt such changes were outside their control. As with potential institutional definitions of critical thinking, Jane felt that:

> Someone 'up top' is going to have to deal with that. (Monthly discussion meeting)

While teachers reported feeling that this ploy meant 'ignoring' parts of guiding documents - graduate attributes and learning outcomes - they felt better equipped for classroom teaching and more comfortable and productive in discussions about practice. This was in contrast to past reports that in many professional circles they felt unable to, or dissuaded from entering into any discussion about 'critical thinking,' the topic seemingly 'off-limits.'

Lance described experiencing a tacit cultural barrier to discussing the meaning of critical thinking, and its pedagogy, based on assumption that intelligent, 'learned' people teaching in medicine should *already* understand what critical thinking is, and attempts at clarification might make the questioner appear lacking or ignorant. Lance commented on this phenomenon:

> Of course you should know what I mean by critical thinking. You're clever, and you're working in the medical school [as if talking from another person's perspective]. (Lance, monthly research meeting)

> Well, it's ['critical thinking'] one of those phrases I've heard bandied around for many, many years…I'm kind of left with the impression it is something that means many different things to different people and that it's probably quite difficult to define. I have my own ideas on what it might be… *but I daren't tell anyone* [his emphasis] (laughs). (Lance, individual interview at outset of research).

Strategy part 2: Use one short phrase to identify the type of thinking desired

The second part-strategy developed by our teachers was to specifically ask students for the kind of thinking they wanted to cultivate in any particular situation, using one short phrase – reflective thinking, evaluative thinking, analytical thinking, etc. They paired their avoidance of the catch-all term 'critical thinking' with a more precise descriptor:

> Just one word, it has to just be one word otherwise you'll confuse them. It seems dramatic but it's what we have to do. We have to say 'reflective thinking' or 'analytical thinking' or even 'creative thinking' else they won't get it [understand]. Say anything more than that and they will have too much to think about and won't get into it [engage in learning to think]. (Jane, research meeting, midway through the research)

However, teachers found they needed to do more than simply replace the abstract term 'critical thinking' with a more 'solid' 'reflective thinking' or 'logical thinking' (for example). For many, such terms could *still* be too abstract, defined differently, and thus problematic. For example, teacher and student might still differ in their understanding of the term 'reflective thinking' and

what it might entail. In discussion, this potential was illustrated by a comparison of Gibbs' (1988) and Dewey's (1910) conceptions of 'reflective thinking.' Teachers understood that when asked for 'reflective thinking,' one student might undertake a cyclical process similar to Gibbs 'reflective cycle,' and the other a linear process like Dewey's, where neither might be what the teacher actually wants.

The process of coming to understand what teachers' wanted from students was evident in their discussions over time, but it wasn't simple. It involved the recollection of many examples of apparently good outcomes (say, past essays & discussions) in which instructions ostensibly demanded critical thinking but where teachers actually found that reflective, analytical and evaluative thinking were clearer descriptions of what was required. Having done so, teachers worked 'backwards' to identify which definition of this thinking would fit the bill, and therefore what questions to ask:

> You really have to be quite specific with your questions, don't you? They need a lot of encouragement *full stop* but still won't get it until you ask it in the right way. Luckily we do this all the time, it's just about matching it up now. (Eleanor, research meeting)

Strategy part 3: Offer concrete guidance with language

Moving on to better teach the thinking they wanted required teachers to adding a third part- strategy; there was still room for improvement. They consulted past assignments and teaching experience to construct clear examples of what this thinking might 'look like' or 'sound like' in speech or writing. For example, Florence reported being unsuccessful at cultivating student thinking when she asked for 'reflective thinking' but had significantly more success when incorporating verbal and written examples in her teaching. Similarly, Jane explained how she offered students explicit examples of how reflective thinking might sound:

> Then you have to tell them *how it sounds*. They have no idea, most of them. I literally had to say 'a reflective comment looks back in time, is about you and contains the 'F' word' [a joke word used by the group to describe feelings]. Some of them need much more, though, so you could then help them to say things like 'my supervisor was cross at me, which made me feel very angry…' (Jane, monthly research meeting)

Teachers gave further examples of language. One encouraged students to *critique* a patient's treatment regime, by asking the question '*I want you to think about whether you like it* [the treatment] *or not, perhaps whether you think it is useful, and why*' and then offered the student prompts for their response: '*so, you might then say, 'I like this part of the treatment because…..but not this bit because…*' Using the prompt to move on to answer the question meant the student would then be engaging in the sort of thinking the teacher was aiming for. Another example was about teachers wanting students to develop their evaluative thinking: '*I want you to think about reasons why this is a good treatment and reasons that it is not*' which they would then follow with a prompt such as '*because of X and Y, I think this treatment is a good option for this man.*'

So, this third strategy helped develop student thinking by cultivating the language necessary to express it. Some students could apparently only understand and articulate a 'kind' of thinking if they had also been shown how to do this. Importantly, teach-

ers understood this third part-strategy to be vital to accurate assessment of thinking as a learning outcome. Neglecting to guide students in the specific language needed to express their thinking would render them unable to take part in discussion but also to pass written assignments. Here, Lance cites such an example - of potentially 'setting a student up to fail:'

> You have this essay, right, which is all reflective thinking. But some teachers must think their students know how to do it already, [because] they don't show them properly. Other ones, they need to learn how to write it all down too. But some teachers don't tell them that either and **then they fail them on it**. It's just not fair. (Lance, personal communication, his emphasis).

DISCUSSION

Our teachers were highly skilled, experienced and well-resourced for developing student thinking. These teachers also understood that developing thinking is not always automatic but can depend on overcoming challenges. They were thus well equipped to identify, and find solutions to the challenges investigated in this research.

Challenges presented by the term 'critical thinking' experienced by our teachers are also reported in the literature. Many useful but different definitions of 'critical thinking' can be found (e.g., Willingham, 2007; Moon, 2008; Moore, 2013; Alfaro-LeFevre, 2015; Davies, 2015), authors also noting the consequential barriers to developing thinking, including the use of the term 'critical thinking' itself (Willingham, 2007, Davies, 2015). How this problem might best be solved is yet to be addressed in the literature.

Strategy part 1

When considering the *complexity and volume* of literature on critical thinking, strategy part 1 makes practical sense; avoiding the term 'critical thinking' in SoTL spaces seems prudent. While well-resourced and able, our teachers were ill-placed to venture into unwieldy discussion about what critical thinking might be, or to select a definition on behalf of Faculty. Their immediate remit instead demanded they optimise student learning.

Considering the *nature* of some definitions of critical thinking found in the literature, our teachers' first move again makes sense. For example, Willingham's (2007) description of critical thinking contains more than 10 'thinking terms' (e.g. inferring, reasoning, deducing, plus several accompanying attributes). Similarly, Facione's 1990 consensus piece canvassing the views of over 50 academics. Offering students, and teaching around such complex definition would again fall outside our teachers' generous, but still limited, remit.

In summary, this apparently novel, pragmatic part-solution had the best interests of current students' learning at heart. However, this strategy alone was insufficient to improve student thinking and achieve desired outcomes.

Strategy part 2

Our teacher's second, interdependent part-strategy again makes practical sense and is supported by the literature. For example, Vygotsky (1986) and Delany and Golding (2014) acknowledge that 'being clear' with learners about what thinking is required is foundational to going on to describe and encourage this thinking. Our teachers took 'being clear' extremely seriously, presenting short descriptions one at a time, having determined exactly what

they were looking for from course documents, resources and past examples. Teaching to best develop thinking is acknowledged as requiring such attention to detail, as it is best done where the teacher develops a full, concrete and explicit understanding of this thinking (Delany & Golding, 2014). This is in contrast with teachers (see Harland 2020) who hold only a tacit understanding of what thinking they want, and cannot describe it.

In looking back at past examples of thinking, teachers seemed, in part, to be using what Golding might call 'reverse engineering' (2011), identifying what the desired thinking might look like, what it might then entail and therefore how might be best described. In essence, partially 'rewriting' given learning outcomes, in order to better achieve a task. While expert teachers will always necessarily 'tweak' their teaching in order to better suit their students (e.g. modify a teaching method to better engage those fearful of joining in; Gamble Blakey & Golding 2018) this implicit 'rewriting' of foundational aims seemed, in part, novel.

What of the more complex definitions of critical thinking?

If we are to reduce descriptions of the thinking we desire to simple phrases, what, then becomes of definitions of thinking incorporating many 'kinds' of thinking? Our teachers were well aware that many kinds of thinking are required for effective learning and optimal professional practice. They also understood their position as teachers at the 'big end' of a curricula spiral (see Harden & Stamper, 1999) and that 'beginner thinkers' need solid foundations to move on to the integration of the many kinds of thinking into their practice. The strategy described here could thus be understood as an essential 'stepping stone' into practice which we have perhaps neglected in our enthusiasm to grow great thinking professionals.

Strategy part 3

Using one short phrase to describe the thinking teachers wanted students to develop was joined with a third part-strategy to guide students in turning thinking into speech or writing. Teachers' argument for this part of the strategy was that its neglect would set students up to fail in classroom assessment, in life and also hinder students' resultant practice as a health professional. For example, reflective thinking is woven throughout many medical curricula with the aim to develop habitual reflective thinking about learning, and is assessed, but its ultimate purpose is preparation for clinical practice (Wilson & Cunningham, 2013; Cruess & Cruess, 2014). Golding (2011, p. 359-60) acknowledges the necessity of such guidance:

> One difficulty with initiating students into the practice of [critical] thinking is that thinking tends to be invisible, complex, abstract and implicit rather than explicitly articulated. How can students internalise the thinking discourse if they cannot apprehend what this discourse is?

This part-strategy is also supported by literature which notes that 'language of thinking,' can present a significant barrier in learning to think (Facione 1990; Wilson & Murdoch, 2013). Some call this language 'opaque' (Hilsdon & Bitzer, 2007) especially to the 'thinking novice' (Delany and Golding 2014) as our students might be considered. As with the complex discussion about critical thinking definition, this issue threatens to exclude students from learning and is thus a vital part of a teacher practice:

> …linguistic opacity and unfamiliarity with notions such as critique are key examples of how HE [higher education] culture and practices can exclude [students from learning].
> (Hilsdon & Bitzer, 2007, p. 1198)

One interesting observation about the phrases offered by teachers in this study is that some words seemed more operational than others. For example, when encouraging their students to develop evaluative thinking, a teacher may suggest they use the word 'because…' What is interesting about this word is that it seems to encourage the student to then 'put their thinking into speech', in this case, to come up with reasons for and against.

While we did not examine this phenomenon in further detail as part of this research, we note the idea that some words might be 'more or less' operational for exploration in future work. We suggest a method which allows reflection and comment on the exchange of words during the teaching and learning process, in relation to their resultant thinking. The Interpersonal Process Recall (Kagan, 1969) method would allow the specific examination of the relative operationality of words used from the dual perspective of teacher and learner.

General comment about potential for further student exclusion

The potential for students to be effectively excluded from learning extends outside of issues relating to a lack of shared view of critical thinking or failure to guide them in the language of thinking. Exclusion is also likely where a teacher has only a *tacit* or *implicit* understanding of what they mean by critical thinking.

Harland (2020) takes an in-depth look at the phenomenon of 'implicit understanding,' finding that many such teachers have never attempted defining what it is they aim for. Neither have students questioned their teacher about what they were supposed to learn. While many students apparently produce what is required, neither group can explain what exactly this is, or why it fulfils criteria for learning; some students 'pick up' skills, and are deemed successful, but only from either group 'getting a feeling' about what is needed, and found, in students work.

Our concerns with this potential scenario are about optimising student learning and fairness. An 'A-student' may more easily sense or emulate what is required, perhaps from reading examples of such work but others may not, especially where experiencing other challenges, but others may not.

We do not know why each of Harland's teachers' practice developed as it did. However, we may ponder if this phenomenon is linked to the sociological issues experienced by teachers in our study, around learning about, and questioning definitions of critical thinking. In the same way, we might also wonder if this scenario might be related to *students* who did not press – or feel they could - teachers for more explicit explanations of what they needed to do.

What about teacher learning?

Teachers themselves are also likely excluded from learning as a result of the protracted debate about critical thinking definition. Not only in definition, but (as they had in their other work) feeling discouraged and precluded from conversations around learning and practice. The communities of practice (see Lave & Wenger, 1991) to which they could have belonged, became closed to them. Hindering a teacher's sociological development ('belonging') (Lave & Wenger, 1991) and professional learning (Wilkinson, 2010; Wilson & Cunningham, 2013) naturally also impacts their

students' learning. We thus find a compelling argument to begin to strategically address issues around critical thinking definition, and its meaning, in our work. Perhaps the suggestions laid out here might begin to form a way forward for better, and more productive discussion about critical thinking.

What about attributes and thinking?
One may also wonder why our teachers apparently ignored the need to teach for the various attributes deemed necessary for developing critical thinking, and which feature in many definitions of it. Such matters did not feature as a theme in our data.

Having observed their work, teachers were seen to actively encourage such attributes in learners as a matter of course; the overriding remit of their small group work had always required such practice. Teachers seemed well versed in encouraging the open mind, sharing sides of issues and helping students develop tenacity in learning, all valuable qualities that enhance [critical] thinking (Facione, 1990). If the 3-part strategy we advocate here is undertaken by less experienced or skilled teachers, the development of such attributes would likely also need to be addressed and perhaps guided, in order to effectively develop thinking for all our learners.

CONCLUSION
We describe medical teachers' approach to better cultivating medical student thinking where many stakeholder parties lacked a shared meaning of the term 'critical thinking.' This failure resulted from an academic literature without consensus, the widespread use of the term in marketing campaigns and because some teachers have never completely questioned exactly what it is they want and why.

These issues played out in the classroom, where teachers and students did not always agree on what they aimed for, in assessment, in challenging interactions between professional colleagues and, potentially, how students developed as professionals. These issues essentially excluded some students from some aspects of learning, and their teachers from professional development, and from being a part of a community of practice around developing thinking.

The 3-part strategy devised by our participants is in part supported by literature about developing thinking more generally, and the first part 'Avoid the term critical thinking' represents an addition to it. We view this resultant 3-part strategy as one providing an acute solution to the various issues around developing student thinking; we do not advocate that discussions about critical thinking definition stall, nor that a consensus should not be sought.

Instead, we advocate for this strategy as a prudential choice allowing better thinking development for students in the here and now. These strategies may be useful in the presence of plans to further develop a shared and useful institutional view of what critical thinking actually means. We specifically recommend these strategies where students are new to thinking, where they will be assessed on this thinking, and are required to develop habitual thinking for professional practice. We also understand these strategies may be useful to practitioners for whom a definition of thinking remains elusive or implicit.

In doing so, we recommend a supportive and tolerant approach by those assessing the development of thinking in the classroom, and particularly in assessment of thinking (say, in an essay). Experience indicates that a student 'repeating' or 'parroting' a phrase used by their teacher can be a useful first step to going on to develop, and spontaneously and authentically express such thinking in their own way.

STRENGTHS AND LIMITATIONS
Research Methods
We recruited only six teachers from one institution, teaching one program, so we should be cautious about suggesting who might benefit from our research findings. At the same time our small sample size is an advantage, as we aimed to develop a *deep* understanding of phenomena, over time.

Our methods put the researcher in a position of potentially wanting their own ideas to feature in the significant findings from this research - due to their positioning as researcher-participant (common in action research). However, the researcher built a trusting, open relationship with teacher participants, founded on the pursuit of communal improvement of practice. The author was careful to explicitly seek, include and examine everyone's ideas in research processes and for the group to consider each contribution on its merits. There were few obvious cases of teachers 'saying what the researcher wanted to hear.'

Results
Results from multiple sources (all our teachers) means we have confidence in these strategies for better cultivating thinking in this context. We also gain confidence from the combined efforts of experienced, expert teachers. While our teacher-focussed data did not contain formal assessment of student responses to teaching methods, our teachers judged that their students developed and expressed more frequent, higher quality thinking.

Suggestions for further research
Further research might test these strategies with more teachers in different contexts where developing 'critical thinking' is an aim, perhaps a comparative study between different student groups with and without these strategies. This research may confirm the extent of strategies' efficacy and possibly illuminate other factors which enhance or create barriers to cultivating thinking, related to our reported challenges.

We also suggest an in-depth examination of phrases which might be 'more or less' effective to students' thinking development, as indicated in our discussion. This research may allow the identification of specific words within phrases that are important 'catalysts' to thinking development, and as a result further clarify how we should approach the content of our classroom teaching.

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