

# Tracing Pedagogical Progression on the Doctoral Level

## Review of Instructional Immediacy Needs, Behaviors and Outcomes

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**Abstract**—While much has been written about cognition and intellect as factors enhancing researcher productivity, less is known about the mental processes impacting scholarly endeavors. The anxiety stemming from such vast and solitary projects as thesis writing has been recognized, but the literature on doctoral study has been more silent on pedagogies supporting thesis completion. To design effective pedagogies mediating postgraduate degree completion and promoting research quality, this article traces pedagogical progression on the doctoral level. As a modest empirical effort investing in affective learning, this work analyses doctoral students' needs for instructional writing support. The analysis reveals unmet needs that undermine student well-being, engagement, and writing progress. The qualitative analysis of 93 engineering candidates' responses directs the pedagogic focus in doctoral writing away from language proficiency towards holistic consideration of learner needs, especially in terms of the affective load involved in thesis writing. This article aims to decelerate the trend towards decreased contact hours on the doctoral level through empirically-derived evidence highlighting the importance of face-to-face instruction. As pedagogy, this study proposes 1) participation in the research community of practice through peer reviews to intensify mimicry strategy in adopting expertise, and 2) teacher immediacy as means of promoting the quality of the mentor-mentée relationship and of ultimately expediting research progress and degree completion.

**Keywords**— doctoral education, emotive needs, teacher immediacy, perceived caring

## 1 Introduction

One of the fiercest rivalries in the global higher education arena materializes in doctoral curricula, with productivity constituting the traditional - and sole - measure of both institutional and individual researcher performance [1]. As public and corporate funding is strongly dependent on performance indicators, universities have eagerly implemented interventions increasing accountability particularly through student

achievement and retention [2], publication productivity, quality of researcher outputs, and ultimately expedition of doctoral degree completion [3].

These emerging global forces [4], largely triggered by funding agency interests [2], impact institutional development also in Finland, where Aalto University has begun to invest in improvement measures to support doctoral candidates in engineering in their academic pursuits. These well-intended endeavors have been insufficiently informed by research evidence, as educational development on the doctoral level has, until recently, been largely shadowed by undergraduate education [4]. Investments in post-graduate curriculum development have represented policy-level actions inspired by institutional pressure and therefore risk being patchy [5] or hasty [6]. At times, politically motivated measures may target change for change's sake, seeking immediate gains at the cost of a more profound and sustainable reform [7]. This may risk the well-established classroom practices [8] that have built the foundation for Finland's PISA success.

Fortunately, in the local culture under scrutiny where writer authority is so firmly built on technical ability, the institutional philosophy has recently taken an interest in pedagogical research. This has yielded interventions that are less strongly policy-driven but rather founded on empirical evidence of actual student needs. Further, the general lack of formal qualifications in pedagogy among academics in the engineering community in question has been conducive to pedagogical inefficiency [5]. This has been further aggravated by the general preference in the engineering world to operate primarily on the basis of technical expertise and analytical intelligence, and to expect similar competences from other members in one's community of practice [9]. This further strengthens institutional demotivation to address global researcher requirements for abilities other than cognitive or substantive [10].

Recent findings suggest, however, that a narrow emphasis on end products and outputs such as theses or degrees at the cost of student well-being and affect induces a risk for research completion. Ignoring the affective and social complexity of writing [11] or the impact of individual learner styles, ineffective self-motivation strategies [12], unoptimal researcher conceptions, self-doubt [13], as well as the excessive requirements for optimism and self-efficacy potentially encourages such self-sabotaging behaviors as procrastination [14]. Self-efficacy involves crucial completion-related outcomes, including self-directedness in learning, positive beliefs about one's abilities in the designated tasks, and help-seeking behaviors [15]. A strong identity and self-image as an active and productive author is crucial for writing progress [14], [13]; self-efficacy generally correlates with academic success [15].

To understand the related emotive needs, this article traces pedagogical progression on the doctoral level by reviewing literature on affective instruction. Generally, the aim is to propose a shift of attention from the constellation of cognitive skills traditionally associated with the writing process, to the tacit capacities related to research writing as a communicative practice. In particular, we call wider research attention to the mentor-mentée interaction that could optimally bolster capacities that support thesis completion.

## **2 Emotive needs on the doctoral needs**

Such European-scale policies as the Bologna Process [16] aim to systematize higher education and the related accreditation criteria [17]. However, they may ignore the day-to-day realities of doctoral supervision as well as the requirements posed for supervisory care and engagement in the collaboration between the supervisor and the supervisee [1]. They also sometimes fail to consider the evidence for the emotive nature of the mentor-mentee relationship and its impact on the success of doctoral education [18]. One positive exception is Dysthe's [19] investigation of the relationship between supervisors and students, yielding the Teaching, the Partnership and the Apprenticeship models as more holistic supervision frameworks.

In contrast, much of extant education literature has focused on researcher cognition and intellect, as well as such text production skills as generation and transcription [11]. Equal interest has been directed to discipline-specific traits, e.g. genre knowledge, topic knowledge, discourse expertise, readers' rhetorical expectations, and the way warrants are employed and arguments framed [20]. Similarly, researcher identity formation and development of own voice [21], as well as reader expectations [22] have recently received increasing attention in engineering. Contrastively, less is known about the tacit, mental capacities either bolstering or hindering research progress [14]. The impact of student beliefs or values on the writing process have been largely overlooked [20], similarly to the correlative effect of writing anxiety [23]. As solitary activity, writing requires initiative, self-efficacy, optimism and persistence and even though these are innate resources, they can be promoted through social support [14].

When pursuing institutional development, it is essential to keep in mind that despite the ostensible focus on system-level improvement, the execution takes place in the classroom, or more particularly, in the interface between the pedagogue and the learners through cognitive and emotive exchange [24]. Pedagogical leaders mediate learning outcomes by enacting an educational climate that either promotes or inhibits learning. The pedagogue's mediating role in eliciting results among learners evokes performance beyond that explained by tangible resources. Profound instructional development therefore requires an internally motivated cultural change, which cannot be mandated from outside [25].

Unfortunately, teacher capacity in engineering programs is assessed centrally through the intellectual capital and knowledge of the pedagogue [24]. This is what teachers have traditionally relied on in their professional activities in postgraduate curricula, especially in such highly analytical domains as engineering. However, the present article questions earlier approaches to doctoral education as solely logical and rational supervision, complying with the recent international shift toward the social nature of the supervisor-researcher relationship [8].

The current work aligns with studies of higher education that examine students as consumers [26], [27]. Traditionally, responsiveness to learner needs has been pursued through supply-driven education based on pedagogues' prior insight into student needs and the extensive expertise in pedagogics nationally cumulated in Finland. More intensive inclusion of doctoral candidates' conceptions and motivators might

facilitate researcher development from data reproducers to information transmitters and finally to knowledge crafters, who understand not only how the knowledge relates to them as authors but also how it benefits the reader [28].

The calls to advance research on education pedagogy, particularly its breadth and diversity as well as the personal relationships involved, strive to horizontalize the pedagogical space and the entire conception of doctoral education [29]. This translates into support provided for doctoral candidates not only in their core research activities, but also in managing such crippling mental barriers and inhibitions as fear and anxiety associated with research writing [13]. This study is motivated by aspirations to meet doctoral students' needs more holistically and in a more targeted fashion. Ultimately, it aims to enhance the quality of doctoral education and promote system-level change in post-graduate curricula.

### **3 Empirical research promoting a shift from supply-driven to demand-driven syllabi**

Following the basic-degree studies that are thoroughly formalized, structured and instructed, the ambiguous, unique and paradoxical nature of doctoral studies easily discourages doctoral candidates [21]. Mistakenly, the research process is often referred to as a journey, implying a systematic, steady and linear progress towards degree completion. However, the metaphor of quest might offer a more realistic description, resonating with the insecurities and struggles involved in the pursuit of the doctoral degree, as well as its iterative and incremental nature. As it currently stands, however, post-graduate education fails to adequately address the social isolation, inhibitions and insecurities entailed by the research process [30]. Aligning with the critical key indicators of thesis quality and quantity necessitates particular pedagogic approaches and modes of instruction.

#### **3.1 Study method**

To design a course attending to doctoral candidates' writing-related perceptions in the competitive, international research community, a qualitative investigation of doctoral students' needs was initiated. The aim was to make researchers' voices better heard and to consider their learning gaps more holistically in the writing curriculum design process. At the same time, the endeavor aimed to respond to the broader calls in Finland for faster doctoral degree completion and higher dissertation quality.

Earlier studies have revealed a wide range of doctoral candidates' needs in general study processes, domain expertise, supervision, scholarly community and resources [31]. The present survey aimed to offer a quick-fix tool guiding the development of the Writing Doctoral Research course in a situation where no previous materials, contents or teaching principles existed to promote the new syllabi in engineering. Due to time constraints, the survey was extremely limited and superficial, comprising only four open-ended questions:

- How could the university help speed up your progress?
- How could you speed up your progress yourself?
- What would you need from your professor / supervisor, department?
- Any other wishes, requests, improvement ideas?

In 2015-2017, altogether 93 doctoral students from engineering attending the course shared their personal challenges, insights, opinions and improvement ideas through the survey. A thematic content analysis was conducted on the responses, with the key signals, that is nouns and verbs, being documented and thematically grouped.

In their responses, doctoral candidates mostly ignored question number 2, assigning little responsibility to themselves for writing productivity. Based on content analysis of the researcher responses, three main themes emerged from the data.

- Day-to-day practicalities related to research or role as a researcher
- Quality of relationship with the supervisor
- Mental barriers inhibiting progress

**Day-to-day practicalities related to research or role as a researcher:** Roughly 65% of the doctoral candidates attending the Writing Doctoral Research course in question come from abroad, and it was therefore alarming that so many practical challenges were reported to undermine the quality of their stay in Finland and performance on campus in general. They complained about too few parking lots, difficulty in finding accommodation, the generally high expense level in Finland, and loneliness. When moving to a new apartment, they had no-one to help move their furniture. Understandably, such concrete obstacles severely contribute to feelings of marginalization and abandonment.

Knowledge of these practical challenges was communicated to the university management, with the hope of inducing a change making the life of the visiting researchers easier. However, private cars are not encouraged on campus, meaning that the visitors have to get used to the public bike system available on campus and public transportation.

Loneliness constitutes a dilemma for which the host university must take more responsibility. The possibly perceived introverted quality of Finns noted by the visitors provides no excuse, as social sensitivity and stance to social relationships originate from no biological traits [9], rather from a welcoming and empathetic attitude. As a remedy, intercultural awareness and internationalization skills need to be more strongly integrated into degree studies in Finland.

**Quality of relationship with the supervisor:** Despite the respondents representing a variety of engineering fields, they generally expressed a need for more support in academic writing for publication. This agrees with prior findings [32] concluding that doctoral supervision is typically directed too narrowly to the subject area and methodology.

Further, the contact with their official instructor was regarded as too infrequent and distanced, interpreted by the respondents as lack of supervisor commitment to the relationship. As concrete evidence of detachment, the respondents mentioned difficulty to book meetings with their supervisors due to supervisor unresponsiveness to

email requests. They also sensed reluctance on the part of supervising professors that materialized as general passiveness to keep in contact with their mentées.

In terms of face-to-face contacts, the respondents reported missing support, encouragement or inspiration, and found the feedback generally demotivating, discouraging and too straightforward. As one researcher quoted his professor, “Once you’ve had your language checked by a professional, I need to correct your text regarding the content”. Such unspecific and categorical feedback fails to guide the researcher’s revision process to any particular features of the work and, while confusing the researcher, also manages to undermine any remnants of confidence.

**Mental barriers inhibiting progress in writing:** The engineering community on the campus has traditionally ignored the socio-emotive load involved in the writing process, possibly as the focus on technical fields has so strongly been directed to technology and methodology. To further complicate researcher positioning also as authors and not merely scientists completing their empirical, intellectually oriented research activities, engineers tend to harness the misconception that successful writing is either an innate talent or driven by inspiration, which happens when it happens. This haphazard nature of writing conveys the idea that text formulation is an uncontrolled and unplanned part of the overall research process [31]. In the absence of writing inspiration, researchers tend to accumulate pressure, which easily transforms into an enormous mental barrier.

Another misconception generally cultivated in engineering designates writing as linear progression that is preceded by thinking. However, despite prewriting time often contributing to conceptual planning [33], there is no evidence that the unidirectional think-then-write strategy has more utility; in fact, [11] proposes that the semantic intent may even become polished during text production. Bidirectional generation through iteration and revising should therefore be added to researchers’ writing repertoires [34].

Proponents of writing as an inherent talent overlook the fact that writing is a skill that can be learned, developed and taught [35]. It is a self-directed and complex skill that requires engagement and persistence in planning, drafting, evaluating and rewriting [36]. Quite encouragingly, it is possible to develop competence and confidence in writing, turning inspiration redundant and providing instruments for those suffering from the blank page syndrome. As the writer’s block, which was repeatedly addressed in the responses (“difficulty in getting started”), is typically caused by negative self-talk associated with perfectionism and feelings of inadequacy, attention should be directed to students’ mental processes, especially self-concept [14].

The respondents were also anxious about inability to detect their own mistakes and self-correct their own writing. As a remedy, checklists were provided in the course for peer review, simultaneously serving as self-review instruments. Further, encouraging pedagogue behavior in the teacher review sessions offers a high-impact channel for guiding author attention towards the value of constructive critique.

## 4 Teacher immediacy as pedagogy

The qualification of university faculty is often research-oriented, with the pedagogue competence being measured by the number of scientific publications. Fortunately, the shift in focus towards learning, resulting from the Bologna declaration, is increasingly directing attention to didactic and pedagogical qualifications [37]. More specifically, scholars of instructional communication have recently begun to revere teacher communication behaviors that positively impact learning outcomes. Such verbal and nonverbal immediacy behaviors that lead to student perception of closeness, directness and connectedness are increasingly known to alter learner perceptions of the student-teacher relationship [38].

Indeed, an undeniable association has been detected between teacher immediacy behaviors and learner empowerment, with the pedagogue's interaction style intensifying attention, stimulating arousal, and increasing student engagement [39]. Teacher behavior is the cornerstone determining the quality of the social interaction; he or she holds the prime responsibility for the level of trust, caring and sense of community and belonging in the classroom. These either facilitate or hinder classroom communication [5].

Uncontroversially, contact-driven instructional pedagogies impact student outputs, measured both as perceived and performed or cognitive learning; learning and short-term information recall become intensified when the teacher communicates positive esteem [40]. Further, students learn most from teachers who are warm, friendly, immediate, approachable, affiliative, and able to foster close personal relationships, at least when measured in perceived learning, which correlates significantly with nonverbal immediacy. In brief, a curvilinear relationship exists between teacher immediacy and students' cognitive, affective and behavioral learning, implying that moderate amounts of immediacy induce the best learning outcomes [41], [42]. The question still remains how to define the most desired learning outcomes; retention of facts is beginning to lose importance compared to critical thinking, lifelong learning and learning to learn [38].

Apparently, on the basis of emotional intelligence models, teachers communicating emotional states to their students influence their affects to the extent that they catch the teacher's emotional state [9]. From this can be derived the commonly harnessed assumptions that positive moods elicit better performance [43].

Consequently, one of the pivotal pedagogic qualifications for any supervisor promoting more effective learning outcomes is communication, bolstering student certainty through application of so-called power language. Certain forms of language generate inferences impacting impression formation, resulting in judgments regarding the pedagogue's competence and intellect. Speech devoid of hedges, intensifiers, deictic phrases and hesitations clearly add to teacher credibility and positively affect learning [44].

Moreover, immediacy behaviors reduce the perceived psychological distance between the instructor and the students and help build positive and meaningful relationships. Teacher immediacy, whether verbal or nonverbal, promotes overall sensory stimulation, liking and closeness with students. It is also linked with student willing-

ness to comply with teacher requests, perceptions of teacher credibility, and learning motivation, associated with both affective and cognitive learning [36]. Teachers can benefit from nonverbal immediacy behaviors immensely: as relational messages are easily conveyed nonverbally or implicitly, the verbal channel is left available for messaging content explicitly. Such nonverbal behaviors include proxemics (distance, e.g. moving around the classroom while teaching), haptics (touch), vocalic (vocal expressiveness), kinesics (facial and body movement, e.g. smiling), eye contact, chronemics (time spent with students), even physical appearance and attire [43], [41], [36].

Similarly, a teacher's communication variables play a role in leveraging ownership in the classroom and inviting critical questioning and exchange. Relational communication variables such as active listening, openness, constructive feedback, trustworthiness, credibility and immediacy influence students task motivation and personal involvement. They also promote the alignment and adoption of common values in the classroom, reducing feelings of powerlessness and intimidation while fostering feelings of qualification, meaningfulness, self-efficacy and self-confidence [45].

As another immediacy-derived approach nurturing confidence build-up and a safe atmosphere, research proposes perceived caring communicated by the lecturer. The construct of perceived caring draws from three factors in teacher behavior: empathy, understanding, and responsiveness. Empathy manifests itself as concern for student well-being; understanding implies the teacher's efforts to comprehend and respect student views, and responsiveness refers to the teacher being attentive and listening to the students while reacting to student needs and problems promptly [46], [47].

Perceived caring conveyed by the teacher, also labelled as goodwill or positive intent toward students, entails benefits in terms of positive learning outcomes. Teacher behavior that signals a positive attitude towards student well-being and their best interest influences learning both on the affective and cognitive levels. Nonverbal immediacy, a concept describing positive evaluation of or affect to students, results in a higher rate of class attendance, decrease in learning loss, improved motivation and more attentive listening [45], [48].

Interestingly, teacher immediacy also tends to decrease doctoral students' likelihood to adopt compliance resistance strategies and facilitate classroom interaction and communication [49]. A pedagogue's caring behavior also impacts student ratings of overall instruction quality, which is an important consideration especially when regarding students as consumers of education [50].

These findings may cause pressure and concerns in pedagogues who know from experience how challenging it is to be cultivate positive affects toward all students at all times under all circumstances. Yet, it is a consolation knowing that it is not the caring as such that matters, but rather the perception of caring that is critical and that mediates the positive outcomes. [46]. Figure 1 delineates the key elements of immediate teacher behaviors and their implications for classroom interaction and learner processes.

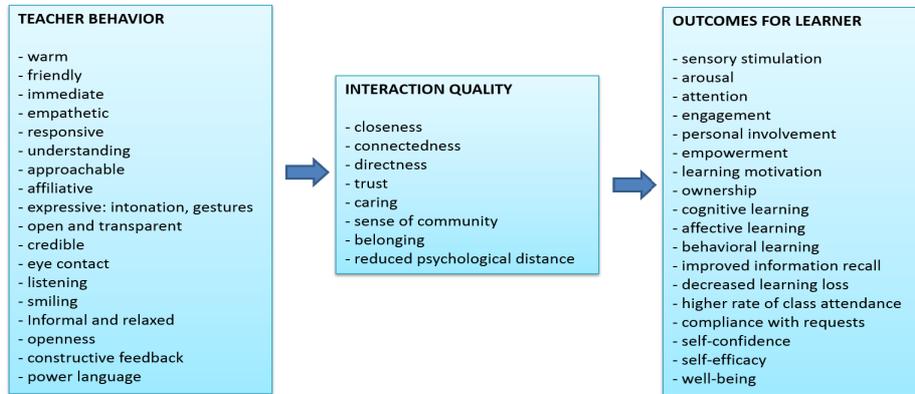


Fig. 1. Teacher immediacy and its mediating role for learner outcomes.

## 5 Role of feedback in the case course

The benefits of teacher immediacy have proven undeniable, but in times of reduced teacher contact time, similar pedagogy can be harnessed through peer immediacy. To promote the overall perception of caring, attention and support in class, the 3-ECTS Writing Doctoral Research course at Aalto University dedicates as much class time to peer feedback as is reasonable against the learning objectives. The 36-hour course workflow is described in more detail in [51]. What is essential here is that each lecture ends in a 30-minute peer review, in which students monitor each other's products against a checklist that reviews the topics covered in the session in question. This serves as means of responding to student calls for more mentoring, personalized feedback, mental support and face-to-face supervision. Additionally, each researcher receives feedback twice from the teacher and a peer that is prepared in advance.

The course puts much effort to ridding students of writing inhibitions by highlighting two pedagogical guidelines: 1) you learn to write by writing, and 2) quality comes from revision. These guidelines bolster deliberate practice by accentuating training alongside instructing, helping students develop routines in writing that lower the threshold of getting started and revising. Deliberate practice subjects researchers to effortful and repetitive exertion through practice tasks, impacts their intrinsic motivation, and ensures feedback that provides them with a realistic image of progress and results [28].

Proficiency in drafting is enforced through continuous feedback, which is founded on the acknowledgement that the first draft is by default incomplete but will eventually grow into full-fledged academic output through iterative revision and peer input. In feedback provision, the lecturer invests much effort in following the principles of teacher immediacy to safeguard student well-being, motivation and inspiration. Feedback follows the sandwich model, first addressing the author's strengths in academic reporting, e.g. proficiency, structuring and argumentation. The constructive component aims to expand the author's solution space by offering

targeted critique that is narrow in scope, deep in the content domain, and structured so as to elicit solutions to potential weaknesses in the manuscript. The sessions end in an encouraging overall evaluation of the written product.

In addition to the class-end peer reviews and the separate, instructor-led feedback sessions, the researchers are provided at the end of the course with a checklist to support self-reviews, peer reviews and writing iteration. This self-study device (Table 1) compiles together the key writing tips covered in the course.

**Table 1.** Self-study checklist.

<b>Introduction and Abstract</b>	1. Make the research topic sound relevant and critical; for whom, why, how?	
	2. Follow a logical pattern in line with journal requirements	
	3. Specify the research gap clearly (however, nevertheless, avoid <i>not</i> )	
	4. Articulate your research aims dynamically using process verbs (avoid <i>focus on</i> )	
	5. Facilitate readability with topic sentences and logical paragraphing	
	6. Explain the key terms and concepts briefly	
<b>Style</b>	1. Replace weak verbs with dynamic, descriptive, strong verbs	
	2. Replace phrasal verbs with <b>literate</b> verbs	
	3. Avoid contracted forms ( <b>n't</b> )	
	4. Use active voice whenever possible	
	5. Avoid colloquial adjectives, nouns and verbs (esp. one-syllable ones)	
	6. Avoid redundancy to promote concision and impact	
	7. Avoid negation to build positive assertions	
	8. Rephrase indirect questions (with <i>how</i> ) into assertive claims ( <i>ways in which</i> )	
	9. Avoid overuse of use with <i>apply, adopt, employ, with</i> , phrasal verbs	
	10. Use <i>really, very, extremely</i> with caution and select stronger expressions instead	
<b>Data commentary</b>	1. Support the strength of your claims with verb choices	
	2. Consider why you are reporting: to neutrally report or to show your position or stance?	
	3. Replace passive structures (with end verbs) with active structures	
	4. Support reporting voices (established paradigms vs. individual studies) with verb tenses	
	5. Synthesize ideas to avoid mechanistic commentary	
	6. Use hedging selectively and with variety (verbs, modality, probability, exceptions)	
<b>Coherence and readability</b>	1. Use conjunctions sufficiently but do not always begin your sentences with them	
	2. Reduce relative clauses (The performance <i>that is monitored...</i> / The performance monitored <i>with...</i> )	
	3. Create general, broad claims as topic sentences	
	4. Back topic claims up with logically progressing evidence sentences	
	5. Go for opposite adjectives, nouns, verbs to avoid negation	
	6. Check your punctuation esp. with relative clauses starting with <i>who</i> and <i>which</i>	
<b>Final proof-read</b>	1. Use prepositions consistently ( <i>risk of/for, results from/of, research on/study of, review of</i> )	
	2. Use hyphenation consistently esp. in <b>premodification</b>	
	3. Consider the necessity to use the Oxford comma in lists with compounds or complex items	
	4. Consider strengthening your claims to avoid unnecessary modesty – make stronger claims!	
	5. To avoid overusing the of-genitive, turn nouns into <b>-ing</b> verbs – especially in your title!	
	6. <b>Make sure you have used adjectives and adverbs smartly. are they really needed?</b>	
	7. Use articles consistently ( <b>the</b> vs. <b>a</b> , first mention vs repetition, processes without the)	

## **6 Conclusion**

Teachers are expected not only to master their subject matter but also to know their learners and learner needs [52] to be able to design individualized curricula that holistically address student capacity, both intellectually and socio-emotively [53]. The idea that doctoral education is only intellectual ought therefore to be dismissed. Instead, the emotive labor involved should be appreciated, and the related emotive needs expressed by students need to be responded to, especially as many recent findings have demonstrated that emotions constitute the key psychological driver of motivation and learning [54], [17]. Identically, studies in the field of education have identified the importance of teacher affects for pedagogical leadership, putting forth new pedagogy such as teacher immediacy and perceived caring [36], [45].

The pedagogue's interaction competence seems to serve as a key qualification reducing student inhibitions and uncertainty and bolstering security [44]. This proves particularly instrumental when serving doctoral candidates who have to face much insecurity and ambiguity as part of their research process.

Focusing on teaching and teacher's professional development could serve as a key strategy in the educational reform [52]. Improvement towards pedagogic excellence requires redistribution of power to teachers and distributed or shared leadership in the classroom. This is instrumental in promoting learner agency and more active ways of learning that hone such higher-level cognitive skills that are in demand [55].

In the absence of training and formal education in new pedagogies, teachers need to take responsibility for their self-development but this requires increased teacher autonomy and investment in professional development. Pedagogical leadership and the related capacity build-up necessitates independence, organizational safety to allow risk-taking and renewal, and unlimited information flow. Updating the traditional modes of teaching also calls for initiative, energy, commitment and ownership [56]. This way we can learn away from education that fosters passive reception and instead, focus on workshops, writing groups, writing retreats, and active mentoring. This could offer a solution to the frequently lamented lack of supervision, which represents one of the most severe outcomes of today's austere university economy.

Further, the quality of supervision sometimes poses particular mental challenges due to its nature as a power and social relationship [57]. Doctoral supervision subjects the candidate to feedback which can be highly emotional and even frustrating and therefore students need help in understanding the benefits and purposes of critiquing and also in learning how to give and receive useful feedback. Feedback requires reviewers who have extensive experience as reviewers for academic journals and who know how to critique in a motivating way. Furthermore, it should be emphasized that giving and receiving feedback across disciplines is advantageous, justifying the mixed, cross-engineering student groups in the doctoral writing course, in which peers do not read too much background knowledge into the text [58].

In general, peer support has been identified as a factor promoting research and study progress [26]. Universities make surprisingly little use of students as sources of learning support, even though sometimes the most effective way to learn is to give feedback, triggering metacognitive effects in both the provider and the recipient [59].

However, inter-student learning requires much guidance and preparation to be effective but without doubt increments the conceptual resources for doctoral pedagogy, broadening the learning and research environment [29].

As doctoral research outputs are so strongly driven by ethos and logos, doctoral pedagogy needs to divorce from the decontextualized, generic form of education and invest more in domain-specific education, instead. Through authenticity and embedded subject matter, the education also promotes researcher socialization into their community of practice and build-up of professional and academic identity [60].

This poses a final challenge for the pedagogues in technical writing classes, who traditionally come from the humanities, typically with a background in linguistics. They undoubtedly have a vast repository of writing competence that could be set as the general ideal for the engineering faculty, but paradoxically they need to downplay this expertise in order to not disrupt the domain-specific cultural or social norms or the disciplinary writer identities. To safeguard researchers' self-images in a way that promotes writing productivity, the teacher should address field-specific traits and conventions with social sensitivity, acceptance and diplomacy, rather than with a strong normatively imposing note [56].

## **8 Discussion**

To design syllabi for the doctoral level that fill both individual researchers' requirements and those of their hosting university, this study set out to examine doctoral candidates' emotive needs in terms of publication productivity. The study was motivated by understanding that thesis completion depends strongly on emotive university-provided support for the writing process, directed to such dimensions of text usability as efficiency, effect and reader satisfaction.

When aligning with the recent trends for demand-driven education and service orientation, the performability of research support can no longer be measured only in terms of such calculable terms as publication productivity and degree attainment time. Instead, or rather additionally, motivational aspects embedded in the supervision process, including inspiration and emotive support as well as the level of specificity and contextualization of teaching content, deserve attention.

Such a new stance to investment in and monitoring of research outputs requires capacity building, not only of teachership but also of the entire university arena. This is the only way towards a broader scope of education, a more productive researcher base – and a more sustained transformation of the university institution into a high-performing service unit.

Teacher immediacy as a pedagogy draws from the teacher's emotional reservoir as a source of constructive interaction, positively infecting the classroom with motivation to reach out and impact others also on the emotional level. Teacher immediacy is an effective way for students to model after and learn from an example. What makes this a particularly powerful method is that through contagion, these empowering practices spread, forming communities of practice or learning groups. These forums serve

as venues of mutual support, thereby enhancing researcher productivity and expediting degree completion.

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