JPHE

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Editorial

Research articles

JOURNAL OF PRAXIS IN HIGHER EDUCATION

Journal of Praxis in Higher Education (JPHE) is dedicated to praxis in higher education. A key assumption underpinning the journal is that education is a moral and political activity and that higher education and its practitioners cannot free themselves from moral nor political considerations. However, this assumption comes with several commitments. Rather than standing only from the outside looking in, as in positioning science or research as more valuable or important, this journal recognises the importance of a reflexive inside perspective. This implies taking the present structures, conditions, traditions and values – both internal and external – seriously, but also in situ when researching higher education.

The journal is committed to research aimed at the transformation of existing practices and conditions in higher education. In particular, it is promoting research that has a transformative potential including both practical and theoretical dimensions of educational work and higher education research. It is also committed to the idea that through education research, one can seek to promote social justice as well as the capacity of people to express agency, and increase the possibilities provided by society at large to its members.

Research concerning praxis in higher education is thus, in a sense, both a theoretical position and a form of active engagement. This journal welcomes contributions that are directly concerned with praxis in higher education or with research that is manifestly relevant to praxis in higher education. This focus includes the following areas, but is not limited to them:

- Empirical studies of the consequences of particular pedagogies, policies, and development activities in higher education;
- Purposes and implications of higher education;
- Justice and other ethical considerations associated with higher education, including implications for politics, society, and sustainability;
- The concepts of praxis and related concepts (e.g., praxis development, theory in praxis, practical wisdom, practical judgement, *phronesis*);
- What constitutes 'good' practice and 'good' professional practice in further/higher education? (and 'good' for whom?);
- Comparative studies regarding the enactment, contexts, and/or outcomes of praxis in higher education;
- Leading and governance in higher education; standardisation;
- Professional learning in higher education;
- Transformative and responsive education;
- Research approaches as and for praxis in higher education;
- Praxis-oriented higher education pedagogies;
- Power and agency in higher education;
- Inclusive education and practices in higher education;
- Criticality and/or fostering critical thinking in higher education;
- Academic identity and living spaces in higher education.

Exploration of key issues and topics from a range of theoretical viewpoints and intellectual and methodological traditions is encouraged. For further information, please visit www.jphe.org.

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From the Editors

Maybe-ing and *must be-ing* in higher education

Introduction

In developing a new academic journal, our core intention, as mentioned in previous editorials, has been to generate, disseminate, and promote the interrogation of knowledge and scientific and/or philosophical investigation of higher education. This is our way of promoting the important and critical task of sustaining higher education, and indeed higher education research, as *maybe-ing* arenas'[1]. By this, we mean sustaining spaces of possibility; of pushing at the boundaries not only of what IS, but also of what is thinkable, knowable, and doable; of imagining how things can be otherwise.

In terms of higher education, the notion of *maybe-ing* arenas suggests spaces in which everyone involved in higher education (e.g., academics, teachers, students, managers, administration staff) *can* individually and collaboratively explore possibilities of how they, society, and life *can be*. Higher education could be a space for creating alternative futures, whether through study; research and discovery; teaching; professional learning; managing; organising; leading; consulting; engaging with various communities of practice, the communities we live in, and with industry; or contributing to journals – especially those, like ours, aimed at *maybe-ing*! If we accept that higher education plays a role in addressing societal issues (see Giroux, 2010), sustaining maybe-ing spaces seems crucial at this historical moment. We live in a world where more and more nations, groups, and individuals face growing threats from narrow minded –even dangerous– conservative interests, conflict, social injustices, and/or threats to our health, professions, and our planet. We also live in a time when the issues we face are becoming increasingly complex (Barnett, 2000). Such issues and complexity arguably demand creative responses and solutions.

Yet, in reality, there are many respects in which higher education is being increasingly colonised by particular forms of normative *must be-ing* (Mahon, 2014). Keeping spaces 'open' can be a challenge, since there is a clear and constant tension between 'what should be' (*must be-ing*) and 'what could be' (*maybe-ing*). Our work, in launching an unconventional journal, within a highly conventional field (higher education), has situated JPHE squarely in the center of this transnational tension. Neoliberal policy and academic capitalism turns are driving an increased *must be-ing* orientation. 21st century reforms have caused a fundamental global transformation in the way institutions of higher education are defined, run, and forced to justify their institutional existence and practices (Beach,

[1] The idea of a '*maybe-ing* arena' versus '*must be-ing* arena' in higher education (Mahon, 2014) is based on the concept of a 'maybe-ing arena' used in an unknown source related to outdoor education published prior to 2001. We have tried to find the original source but without success. The Editors would be grateful for any information about the source.

2013). The market-like conditions that this creates force all actors within academia to compete within (quasi-) market conditions, performance-based research funding, and publishing norms that, in many ways, reduce opportunities for innovation in both research and teaching in higher education.

In terms of higher education research, or scientific work in general, researchers are constantly part of debates within and across their respective scientific communities. Some of these debates concern ideas about, or challenge, 'truth(s)'. These debates are not absolute. They are constantly in flux, and we see this dynamic flux as positive. We have seen examples of what happens as a result of false scientific claims[2] and the consequences such claims can have for the legitimacy of the higher education institution. However, in this debate we also see risks associated with claiming something to be more 'true' than something else. A lot of cultural over-simplification – in science, as in politics – all too easily suffocates alternative claims of thinking otherwise. In our work in JPHE, we find ourselves asking if academic values, norms, and beliefs about publishing academic papers might inadvertently prescribe and limit some types of research(ers), while unfairly rewarding others. The result within this nexus of tensions – whether we get it right or wrong – is our journal.

Both *must be-ing* and *maybe-ing*, as we show in this editorial, are needed in higher education and in scientific work. However, the prioritisation of one over the other *and* denial of the tension between them, can be problematic. Our aim is thus to engage these ideas and consider the tensions between *maybe-ing* and *must be-ing*, not only for those involved in higher education and higher education research, but also for JPHE. We discuss these orientations one at a time, exemplifying some of the ways in which they are perceived and experienced across academia. We then explore tensions associated with navigating both, using our experiences of establishing *JPHE* to illustrate some of our reflections. We conclude by considering the role of courage in ongoing work with these tensions. The discussion is meant to serve as an *opening* for critical dialogue rather than any kind of answer to the challenges we face.

A *maybe-ing* orientation?

In some respects, the expression *maybe-ing* is relevant to the basic missions (teaching, research, and engagement) of contemporary universities, although such missions manifest differently across institutions, disciplines, and geographical settings. A core purpose of universities, cutting across all three missions, is arguably that of 'knowledge work' (Bullen et al., 2010, p. 54), for instance, knowledge acquisition, the dissemination of knowledge, access to knowledge, and knowledge generation (see Nixon, 2011; Habermas, 1989; Calhoun, 2006). New insights (including reflexive insights) and discoveries can be empowering and/or generative, leading to new understandings, opportunities, and possibilities for action and thought, for example, within disciplines, professions, and communities. This extends to cultural knowledge and connects to the role of universities in terms of cultural transmission and cultural self-understandings (see Habermas, 1989) as well as to the 'continuity and creativity of culture' (Calhoun, 2006, p. 10).

[2] See for example the so-called 'Paolo Macchiarini affair'.

Related to this, universities also serve a civic purpose, which is in line with the notion of higher education as a *public good* (Nixon, 2011) or *as public good* (Solbrekke & Sugrue, 2020). This purpose is fulfilled in part through the formation of citizens (Giroux, 2010; Walker 2002). Universities play an important role, for instance, in enabling people to participate meaningfully, and in an informed way, in public life (Giroux, 2010). Universities also contribute to the formation of societies. This occurs through social critique (Bleiklie, 1998); helping to address social issues (Giroux, 2011); and by informing and framing public debate (see Habermas 1989; Giroux, 2010). Crucial debates from a *maybe-ing perspective* would concern what constitutes a public good (see Nixon, 2011), as well as, what different possibilities, positions, and goals can be collectively enabled.

Another important purpose of universities is the formation of professionals (see Bleiklie, 1998; Calhoun, 2006) and, through professional education and research, the formation (and transformation) of the professions (e.g., Lee & Dunston, 2011). Many people engage in higher education in the hope of opening doors to a (new) career. In doing this, they in some ways embrace the possibility of being and becoming some other form or version of themselves (professionally speaking) and/or of being part of a (new) profession. If they graduate, and become part of their chosen profession, they can also possibly contribute to the development of that profession. *Maybe-ing* might be more relevant to some professions than others, however. For instance, in many established professions, like accounting, professional pilot, or in certain parts of the military, there can be less scope or need in particular aspects of the work involved for creativity, and more demand for predictability, order, and precision.

Universities also serve an economic purpose (Bleiklie, 1998) by providing particular services and generating products (e.g., new technologies, innovations) that are of local and national economic benefit (Calhoun, 2006). They also produce an educated workforce. Although there is an extent to which an economic focus is increasingly dominating the work of universities at the expense of other functions (Bleiklie, 1998), it is also apparent that university-based enterprise can take humanity into previously inconceivable realms.

All of these purposes connect in some way to the ideal of higher education as a site for human flourishing (Nixon, 2011). For instance, higher education, despite the existing impediments and ongoing struggles for equity, has provided women with opportunities to change the directions of their lives from gender stereotyped paths. They can pursue their own dreams in the intersections of student and/or faculty member with the *must be* subject positions of a 'daughter', 'wife', and 'mother'. In this sense, higher education has helped create the possibility of *may be* subject positions and functioned as a site of human flourishing for women (Khalifeh Soltani, 2020).

The construct of maybe-ing is particularly relevant to higher education research. Higher education research, like any research, could be considered *maybe-ing* to the extent that it is curiosity-driven and/or involves venturing into the unknown. Some might also say that higher education research can be *maybe-ing* if it embraces plurality, opening up possibilities by allowing for multiple interpretations, multiple knowledges and ways of knowing, and multiple realities. Praxis-oriented critical research, we suggest, is a kind of research that especially reflects a *maybe-ing* orientation. Such research seeks to generate knowledge that may lead to a better world/reality/situation/practice while changing – and being changed by it. Put another way, an orientation to praxis aims for an understanding

of the world (who are we? what are we doing? why?) and a remaking of it at the same time. This is the kind of ongoing, transnational journey and dialogue our journal hopes to actively facilitate and directly support.

A *must be-ing* orientation?

Just as we have *maybe-ing* aspirations, conditions, and practices shaping how higher education and research unfold, we also have *must be-ing* aspirations, conditions, and practices, which constrain what we do and how. Policies, schedules, formulas, and prescribed procedures and other such constraining phenomena are *must be-ing* aspects of everyday life, work, and study, shaping and informing activity and thinking in varying ways. In some contexts and respects, this is unavoidable, warranted, or even desirable. Must be-ing practices can be, for instance, relevant to the preservation of human life or dignity; the stabilisation and security of communities and organisations; or the prevention of environmental devastation and oppression and exploitation of people. However, there is a sense in which both higher education and scientific work are becoming increasingly oriented by top-down, instrumental and pragmatic, economically driven *must be-ing* (rather than ground-up, curiosity-driven *maybe-ing*). And this imbalance, we suggest, is cause for concern.

In higher education, academics, students, and other members of university communities are constantly exposed (and perhaps contribute) to norms and expectations that shut down possibilities of action and thought instead of opening them up (Davids & van Eerdewijk, 2016). These norms and expectations are increasingly made explicit and institutionalised, it would seem, through written texts (e.g., policy documents; quality assurance checklists; accreditation or audit criteria; standardised forms and templates, assessment exemplars; schedules), some of which are top-down directives. They are also sometimes so implicitly embedded and perpetuated and/or 'naturalised' in our practices and discourses that we take them for granted and no longer recognise or even see their constraining, *must be-ing* effects (Watermeyer & Olssen, 2016). This can be so despite the widespread cautionary tales in higher education scholarship about the rise of performativity (Ball, 2012), managerialism (Morley & Crossouard, 2016), and an audit culture (Shore & Wright, 2004).

How time is treated in higher education is one example of what we have been alluding to. It seems that a steadily increasing number of people working and studying in higher education are being ruled by, and obeying, time sheets and schedules (Widmalm, Bennich-Björkman, Jarstad, Ahlbäck Öberg, Hermansson, & Karlsson, 2016). What is accomplished by continuously measuring the time it takes to reach a goal or fulfil a task? An Ethiopian doctoral researcher recently asked one of us how we, in Swedish Higher Education, know when to stop thinking. The question came after a doctoral seminar which, in Sweden, tends to be strictly time controlled, with no allowance for delays. For him, the time-slot of an hour and a half for a seminar was far too short, and he wondered why the conversation had to stop, just when things had finally started to become interesting. The answer to this is, at least partly, that time has become for many higher education institutions around the world part of how we regulate and measure what we produce and when (Widmalm, et al., 2016). The clock is ticking.

This is part of a broader preoccupation with efficiency that many associate with, among other things[3], the neoliberalisation of society (Peck & Tickle, 2002), a process by which a market logic has affected and transformed many social, political, and economic aspects of life across the globe. Higher education, within this context has had to adapt to market needs, and in some cases, works against the notion of education as a public good (Olssen, 2016). An increased control of higher education by the market has meant that economic discourses are increasingly foregrounded at the expense of an independent *maybe-ing* space (Olssen, 2016).

Paradoxically, *must be-ings* frequently occur in higher education even when the opposite effect is explicitly stated as a goal. Internationalisation is a good case in point. Internationalisation is often framed as self-evident, objective, and value-neutral (Angervall & Simonsson, in press), and there are claims that it both enhances and is a facet of widening participation. However, more critical analyses highlight, ironically, that internationalisation often benefits or includes only *some populations* served by higher education, not *all populations* (see also Stromquist, 2007). The idea that there is a standard, or 'one-size-fits-all' or value-free, approach to internationalisation will not stand up to a critical analysis of the intersection between 21st century migration, mobilities, and internationalisation. Uncritical approaches to internationalisation is an example of how *must be-ings* obscure blind spots, across global and Nordic higher education (Hoffman, Khan, Habti, Ndomo, & Lima-Toivanen, 2020).

A similar paradox can be found in higher education research and scientific work more generally. Conclusions are sometimes drawn in scientific and philosophical debates (based on a critique of scientific relativism) that research should be about stating facts and finding neutral and objective answers, while critical and more relativist research standpoints are discussed as dangerous, or based on confusion or left-wing ideologies[4]. The idea of (some) research is to generate new insights, but this possibility is potentially diminished if aspects of the inquiry are too fixed or normative to begin with, or if those conducting the inquiry have more or less already arrived at the answers. (See Melina Aarnikoivu, this issue, for a discussion of nexus analysis within doctoral education research that challenges precisely this tendency). This contrasts with a *maybe-ing* notion in research of keeping alive the search for new knowledge. If higher education and research about higher education drift too far into being 'fixed' at the *must be-ing* end of the spectrum, we cede the creative tension of *maybe-ing* – at the opposite end of that spectrum (see Hoffman, Nokkala, & Välimaa, 2016). This is particularly relevant to diversity work [5]. Sometimes leaders/managers work to accomplish a more gender equal higher education sector, for example, yet normative concepts and methods are used to study gender related issues. (See Leathwood & Read, 2009, and Angervall & Beach, 2018, who have tracked and debated the hegemonic relationships established in and between different academic and scientific settings). We need to ask whose gender equality is fixed by this (Davids & van Eederwijk, 2016)?

Scientific communities are *must be-ing* in other ways as well. It is now widely recognised (see Widmalm, et al., 2016) that researchers are obliged to play certain rules of the 'academic' game in order to survive and thrive in academia, and

[3] For example managerialism, or a means-ends, technical rationality.
[4] See Hämäläinen (2019).
[5] See the discussion by Davids & van Eederwijk (2016) of the risks involved in prescribing particular facts and solutions in the context of gender mainstreaming.

the domain of higher education research is no exception. There are spoken and written, as well as unspoken and unwritten, rules (reinforced by economic incentives and penalties) about how much one ought to publish per year, where to publish, and with whom to publish. Publishing in international peer-reviewed articles in high stake journals has become more 'acceptable' or 'valuable' in many contexts than publishing in book chapters or in national and professional practice forums, for example. Although it seems to change with national political agendas (especially when connected to state funding), *what to research and publish about* also seems to be somewhat prescribed. We return to this point later in relation to the journal.

In many respects, we can talk about elements of academic culture and academic life that constrain our practices and praxis as *walls*. Walls are, in Ahmed's view (2016), 'those hardenings of history into barriers in the present' (p. 135). The question of how to deal with the walls within and shaping academia, and how to keep academic spaces *open* is part of an ongoing source of tension for many. We explore this tension in more detail next.

Maybe-ing-must be-ing tensions

Maybe-ing and *must be-ing* are clearly at odds with each other, even though both have a place in contemporary higher education and science. Indeed, both are in high demand in some ways. The *mustbe-ing* areas of higher education and higher education research can help 'pay the bills' and deliver crucial outcomes and deliverables for a wide range of stakeholders who need predictability and stability (reproduction, stability, and continuity). The most creative areas of higher education and higher education research define the cutting edge of knowledge (transformation, change, and discontinuity).

There are at least four additional tensions that add complexity to this already complex tension. First, as suggested above, not all *maybe-ings* are generative, or perhaps what might appear to be *maybe-ings* for some amount to a shutting down of possibilities for others. This heightens the need for critical debate about our frames of reference and what *maybes* and *must bes* we need and can live with. Second, when we try (that is if we try) to transform our conditions, we as academics, students, leaders, researchers, policy makers, journal editors are actually part of the conditions we are trying to change. This means that our sense making is mediated by those same conditions, which may create walls in ways that we are not even fully aware of until it is too late. For instance, a *must be-ing* logic can dull the imagination in ways that perpetuate itself. This includes the 'methodological imagination' (Fine, 2018) and the 'sociological imagination' (Mills, 1959). Third, higher education can be a *maybe-ing* arena for those within it in, and the same applies to higher education research, but both are exclusive spaces in a sense. Fourth, we cannot *not act*, and our actions once performed cannot be undone. This means that at some point in our daily activity we have to make decisions and take action, and this in turn means a kind of closing down of options as we go about our work (and lives). So there is an inevitable limit to *maybe-ing* as we have described it.

We have experienced these tensions first hand in establishing this journal. Our aspiration for JPHE from the outset has been to ultimately make a difference to the higher education landscape, at both local and global levels, partly by *being a bit different* from the higher education journals already in existence (see our

inaugural editorial for a more detailed account of our aspirations.)[6] In order to live up to such aspirations, a journal must first of all survive, which goes hand in hand with earning the respect and interest of the academic community. For that, certain standards must be set, reached, and then maintained, and the journal needs to be noticed. All of these things require (a) resources, and (b) living up to certain expectations of what an academic journal is, so that potential readers and contributors will recognise it as one.

The resources needed to establish and manage a journal cannot be underestimated due to the administrative and scholarly work involved. JPHE is a not-for-profit journal because of a commitment to open access publishing to and broadening research-based debate about higher education. This makes JPHE, as a new journal, somewhat vulnerable with respect to resources. It relies heavily on 'volunteers', good will within the academic community (for example its Editorial Board members), and institutional support (i.e., from our own institutions). External funding can obviously make a significant difference. However, in order to be granted funds, a journal needs a 'track record', and this is difficult to establish without adequate funds to begin with. So what JPHE may be as a journal is constrained by scientific funding conditions, and also its own ambitions, which make certain funding conditions relevant.

Expectations of potential contributors are also relevant here because a 'track record' is not possible without submissions. A journal does not actually exist without submissions. We have been fortunate to receive exciting and interesting contributions to the journal so far, but to sustain the debate, and have ongoing regular issues, JPHE, like other journals, is compelled to meet certain criteria for authors to consider the journal worthy of their work. This includes impressions of quality, focus, and readership, and, increasingly in this neoliberal age, factors related to rankings, impact, doi numbers, and cross referencing systems. Many institutions now require their academic staff to publish in high stake journals. Indeed promotions, salary, and future funding can depend on it (see e.g., Hammarfelt, de Rijcke & Wouters, 2017). A so called 'Norwegian list' is used in the Swedish higher education sector to identify how much value a single publication has on the open academic market. The list and others like it appear to be prescribing how journals are to be measured/judged and selected, and how journals and publications ought to take shape and locate themselves.

This begs the question of how a journal like JPHE can maintain itself as a *maybe-ing* space and avoid contributing to the sea of demands and *must bes* being placed on the academic community. How can this journal, or indeed anyone associated with higher education and research, achieve ambitions to challenge aspects of 'the game' (or even 'the game' itself) while in some respects being part of the game? We think this is a tightrope – stretched between maybe-ing and mustbe-ing. The object of the game, for us, will be a continuous balancing act, as our journal moves forward.

Conclusion: Imagine the academy as something different

In this Editorial, we have painted a picture of higher education and higher education research as sites of a *must be-ing-maybe-ing* tension. We have also highlighted

[6] Editorial, Vol.1, No. 1 (Aarnikoivu, Mahon, Agnafors, Hoffman, & Angervall, 2019).

some of the ways in which this journal aspires to continue to respond to this tension, and the must be-ing walls created by, for example, standards, ready-made methods, norms, and expectations, and pressure to produce and settle on answers. We are not alone in this. Many academics and others in the higher education community work daily to keep spaces 'open' and push back against an ever-spreading *must be-ing* logic. Such work can be risky and demand inventiveness, as Ahmed's (2016) words suggest:

> When we come up against walls, how easily things shatter. To be shattered can be to experience the costs of our own fragility: to break, to reach a breaking point. How can we aim for breakages, and how can we become inventive in dealing with them? (p. 163)

Push back (or 'breakages') means daring to be vulnerable, and so it requires courage, from our perspective at least; courage to stay critical. What can give us courage and energy in the face of walls is our solidarities with others, the kinds of solidarities derived from working with others in a common project and in meaningful conversations.

JPHE is a journal dedicated to such conversations, to furthering understandings of how things are in higher education and higher education research (and what we are doing, and the (potential) consequences of what we are doing), which is an important part of helping us to stay critical. Articles in this JPHE issue by Serafina Pastore about student conceptions of assessment, and Jan Gustafsson Nyckel, Rolf Lander, and Per-Olof Thång on reflective practice in a preschool teacher education program are examples of this. JPHE is also dedicated to understanding how things *may be* if we dare to consider and pursue creativity in our everyday work (for an example, see the article by Anne Algers and Linda Bradley in this issue which offers novel ways to think about and engage programs, like teacher education programs, that comprise our everyday work). In this sense, we have an ambition to help shift the prevailing conversations in academia towards *what is possible* and towards *making change possible*, especially in areas where urgent change is needed. We hope the collection of contributions will promote, over time and in a substantial way, the courage, criticality, and collective efforts needed to achieve what may be.

Kathleen Mahon, Petra Angervall, Sara Khalifeh Soltani, David Hoffman, Melina Aarnikoivu, Lill Langelotz, and Catarina Player Koro

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Insights into teachers' views on sharing ways of knowing and ways of teaching between and beyond existing disciplines

Anne Algers and Linda Bradley

Abstract

Since academic teachers belong to different disciplines and thus discourses, they have different ways of knowing and teaching. Recent societal challenges call for thinking beyond boundaries and re-visiting academic practices. The purpose of this study is to investigate how academic teachers view sharing of knowledge and teaching. The study is based on survey data from eight faculties and interviews of teachers from each of these faculties at the University of Gothenburg. The results show that professional development courses in higher education teaching and learning, as well as open practices, and collaboration between academic disciplines and society are practices, which Galison (1997) termed trading zones. *These trading zones are sources of learning to theorize and to facilitate exchange among peers with the potential to develop knowledge, identity and moral commitments necessary to address societal challenges. Further, the results suggest that universities need to scaffold these sharing practices. The findings inform how academic teachers' practices can be transformed into sharing between and beyond academic disciplines.*

Keywords: collaboration with society; open practices; professional development courses; societal challenges; trading zones

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Introduction

Academic practices have traditionally been divided into disciplines hosting an established set of problems, discourse, and content areas. However, the significance of disciplines is being increasingly questioned, especially where multidisciplinary collaboration is required to address real-world problems (Trowler, Saunders, & Bamber, 2012) and to develop 'new fields of inquiry and forms of knowledge production' (Hannon et al., 2018, p. 1425). As the concept of discipline is under scrutiny, researchers have called the phenomenon of adhering to disciplines too rigidly *academic tribes* (Becker, 1989), *silos* (Kreber, 2009) or *tribes and territories* (Trowler et al., 2012). These terms have become metaphors, defining how knowledge is organised in disciplinary subgroups in universities and how cultures

of academic fields have their roots in different knowledge characteristics. This in turn suggests a strong sense of disciplinary belonging and identity that can undermine collaboration across disciplines (Peel, 2011).

Gilbert (2016) suggested that there are good reasons for disrupting traditional ways of doing and to encourage thinking and acting beyond traditional identities and disciplines. She argued for a paradigm shift in ways of knowing and ways of teaching on three different levels: First, science should neither be treated separately from human thought (and values) nor from education. Second, teaching should not be based on mass instruction of students through pre-determined steps that are aimed at mastering topics of little interest to them. Third, Gilbert (2016) stressed that society cannot be 'treated as an entity, as something that has always existed' (p. 198). Such a paradigm shift towards *de-siloing disciplines* within the academy is often limited by existing but unnoticed or unexamined assumptions and views, suggesting that individuals and institutions become immune to change (Kegan & Lahey, 2009). In fact, the de-siloing metaphor 'captures the concern of interdisciplinary curriculum design, and marks an orientation to work with multiple domains of knowledge and terminology' (Hannon et al., 2018, p. 1432).

Numerous studies have focused on how digitization increases interaction and collaboration within and beyond the academy but, since both are based on social relations, more focus should be on the conditions of these individuals and human aspects of their social interaction (Castañeda & Selwyn, 2018).

This study is set out to identify academic teachers' assumptions and views about knowledge and education. In addition, we focused on better understanding how academics engage in new ways of participating across boundaries and in scaffolding students' ability to think between and beyond existing disciplines, especially outside of the university context. Galison (1997) coined the phrase *trading zone* as a way to explain how physicists from different disciplines collaborate; in other words, how heterogeneous actors were operating with a joint interest and common ground in mind. The concept of educational trading zone, as a metaphor, describes the space where ideas about learning and teaching are shared within and between disciplines (Mills & Huber, 2005). Three primary reasons that impede trading within and between discipline are suggested: 1) the low status of education as a discipline, 2) disciplinary pedagogies embedded in academic identity, and 3) resistance to engage with new visions of teaching professionalism (Mills & Huber, 2005).

In the following section, we give an overview of related research, followed by our argumentation for rethinking current practices, in the light of the findings of our study.

Ways of knowing and ways of teaching

Scientific consensus implies collective judgment, position, and opinion of the community of scientists in a particular field of study or discipline. Kuhn (1962)

proposed that scientific consensus was never truly a matter of pure logic or pure facts but worked out in the form of *paradigms*, which were interconnected theories and underlying assumptions about the nature of theory, the goals of science, and the consensus on appropriate inquiry that connected researchers in a given field. Along these lines, paradigm shifts have been discussed as major shifts in scientific practices.

Biglan (1973) conducted a systematic classification of disciplines based on multi-dimensional analysis of how academic scholars judge different subject areas on a set bi-polar scale. These dimensions of paradigm support Kuhn's theory that some disciplines belong to a single paradigm with consensus about both content and method, whereas other disciplines lack consensus (Kuhn, 1962). Biglan identified three characteristics: 1) a distinction between hard (natural sciences) and soft (humanities and education); 2) a dimension of application (the distinction between pure and applied); and 3) a dimension of concern with life systems (a life/non-life distinction). Research on this classification system indicates that hard fields emphasise the professional preparation of students through the learning of facts, principles, and concepts. Soft fields, in contrast, emphasise general knowledge, personality development through the promotion of critical thinking and reasoning, communication, as well as formation of values (Rotidi et al., 2017).

There are other concepts identifying and at the same time questioning the understanding of what constitutes a specific disciplinary area. One such a concept is the so-called *threshold concept* theory, that is 'understanding or interpreting or viewing something without which the learner cannot progress' (Meyer & Land, 2005, p. 1). The value of threshold concepts has been questioned due to subjectivity of descriptions of each characteristic (O'Donnell, 2010). To date, it has been difficult to measure threshold crossings and there is a need for a more convincing body of evidence for it to be valid (Nicola-Richmond et al., 2018) and thus for being able to identify what is important within a specific discipline.

If we return to how views on disciplinary boundaries for ways of teaching has developed, John Dewey's (1916) seminal insights are as relevant today as ever. He indicated the importance of teaching students how to integrate and generalise knowledge in higher education: 'the end of education is not the bare reception and storage of information, but the formation of personal powers of attention, memory, observation, abstraction, and generalisation' (p. 67).

A number of academics have suggested that views on teaching are closely linked to their views on knowing (e.g., Kember, 1997). Shulman (2005) argued that pedagogies are pervasive in that they are transferable and can be 'traded' across disciplines and argue for participating in trading zones (Gardner & Shulman, 2005). The concept of *trading zones* is a way of describing a space in which ideas about learning and teaching are shared within and between disciplines, and this trading is suggested as a response to rigidity of habits and for improvement of teaching and learning in other disciplines (Shulman, 2005).

Teachers' individual views and intentions have also been found to affect their teaching approaches. Prosser et al. (2005) investigated university teachers'

understanding of their subject matter and how this subject matter was structured in their teaching, depending on whether they had an atomistic view on their subject or a more holistic view. They reported that teachers with an atomistic view on their subject resulted in a more surface type of learning among students (Prosser & Trigwell, 1999).

In the next section, we discuss why disciplinary and sometimes even individual views on knowing and teaching may limit or hinder our ability to address complex societal problems, especially where rethinking assumptions is warranted.

Rethinking ways of knowing and teaching

In his argumentation that knowing should be understood as 'a way of doing', Biesta (2007, p. 13) refers to Dewey's (1920) work in which knowing is based on experiences; specifically, feedback systems between human inquiry, actions and consequences in their environment. The kind of hypotheses that are essential for rigorous conduct inquiry are termed 'ends-in-view' (Dewey, 1920, p. 223). That means academics neither in their role as researchers, nor in their role as teachers should uncritically accept conventional problem definitions or predetermined ends.

Some complex issues such as sustainable development, health, and ethics, are particularly in need of a collective and participatory angle of entry (Wals, 2007), since they are contested areas of concern that are difficult to predict and at risk of being more opinion-based than evidence-based. Further, the ideas of looking at disciplines as hosting a specific body of knowledge with its own procedures have been challenged in that there is little that is unique for a specific discipline (Trowler et al., 2012). Rather, we turn to theories of boundary crossing and expansive learning, characterising both activities to reach consensus between disciplines and activities that change values and views (Engeström & Sannino, 2010).

Engeström and Sannino (2010) described expansive learning as an integration of two directions, one that is learning in networks of interconnected individuals across boundaries that share a willingness to understand a contested issue. The other direction tackles issues such as subjectivity, emotion, identity, and moral commitment. Thus, in expansive learning the boundaries are hard to draw, actors from different disciplines are coming together and it is about learning something that is not yet there. This view on learning assumes that the learners' autonomy and self-direction is acknowledged and that understanding is socially constructed (Thomas & Brown, 2011). When societal questions are complex and need to be addressed from different perspectives (Gilbert, 2016; Wals, 2007), expansive learning and trading zones can emerge as new cultures of learning.

Aim and research questions

The aim of the study is to contribute to the understanding of how academic teachers' disciplinary work is organised and to identify the trading zones where transdisciplinary sharing is taking place.

Research questions:

1. How do academic teachers' in different disciplines characterise ways of knowing and ways of teaching?
2. What are academic teachers' views on sharing within, between, and beyond existing disciplines?
3. Do academic teachers believe that sharing creates new ways of thinking and teaching?

Methodology

In order to investigate academic teachers' views on ways of knowing and ways of teaching within, between and beyond different disciplines in universities, a mixed method approach was adopted. First, a survey was designed, covering questions about views on teaching in higher education. The survey contained 11 questions (see Appendix 1). Initially, there were background questions about disciplinary belonging and teaching experience in order to identify differences between disciplines and teaching experience. In addition, disciplinary characteristics were identified through questions about teaching methods, sharing cultures (collegial discussions as well as digital sharing), and teaching principles based on Laurillard's (2012) work on teaching design. Finally, there were questions about implications and experiences of the courses in higher education teaching and learning. The question types were a combination of a Likert scale for the question on teaching principles, open text fields for one of the questions about the courses in higher education teaching and learning, and the rest were answered by ticking one or several options. We also provided the possibility to add alternatives to preselected choices.

After the analysis of the survey, follow-up interviews were conducted to obtain a more in-depth understanding of the views of the teachers' ways of knowing and ways of teaching and to identify where transdisciplinary sharing is taking place. Two central aspects derived from the survey to be included in the interview questions are collaboration across disciplines and engaging in sharing practices. Here, openness and digital learning are two topical areas connected to collaboration and sharing.

We approached academics at the University of Gothenburg, hosting eight faculties with 38 departments, covering a wide variety of disciplines in higher education. All of the academics surveyed had participated in professional

development courses in higher education teaching and learning offered at the university. The courses consist of three foundational courses, each covering various aspects of teaching theories and methods as well as student learning approaches, with the aim to support teachers in their teaching practice of writing learning objectives, designing, assessing and examining courses. Since the courses are open for all teachers at the university, there is a mix of teachers belonging to various disciplines, which caters for fruitful discussions among the course participants, where different contexts and views are compared. Participation in these types of courses have become a requirement for employment as a lecturer, or for promotion to professor at most Swedish universities (Ödalen et al., 2018). In addition, the courses offer a rare opportunity for teachers across a wide variety of disciplines to come together and share ideas about teaching and learning.

Survey

The survey was distributed via email to 526 academic teachers from various disciplines at the University of Gothenburg who had attended courses in higher education teaching and learning as part of their professional development, during a period of five years, from autumn 2013 to spring 2018. The academics were guaranteed anonymity, and could access the survey at Webropol via a link and could voluntarily reply. Responses were obtained between June and August 2018. From the total number of emails, including two reminders, 487 persons were reached. The 39 who were not reached were either on leave, parental or sick leave, or had finished working at the university. A total of 155 persons responded, leaving a response rate of 32%. It is an undeniable fact that since our respondents were recruited from courses stretching several years back it affected the response rate.

In the survey analysis, data was analysed and reported with descriptive statistics (%) and bivariate tests from cross tabulation were done with Pearson's Chi-square test, including effect sizes for Cramer's V.

Interviews

To obtain an in-depth understanding of the survey responses, 16 survey respondents, two respondents from each faculty, were recruited for individual semi-structured interviews. The two researchers and authors of this article interviewed eight respondents each, one from each faculty. The interviews were audio recorded and lasted between 20 and 30 minutes. In 19 interview questions, the respondents expanded on the themes in the survey, such as views of research and teaching, the meaning of knowledge, collegial collaboration, engaging in sharing and openness, digital learning, and collaboration with society including public outreach. Subsequently, the interviews were transcribed in their full length and the documentation included who spoke, what was said, and, in some cases, how it was said. Sixteen interviews were in Swedish and two in English. After transcription, the data was anonymized. Responses were organized under tentative themes, in order to identify consistencies and differences. The outcomes were analysed individually by the two researchers and then cross-examined and analyzed. From

the analysis prominent themes emerged in consensus from the interviews. Citations of relevance were identified as excerpts and citations under each theme and Swedish excerpts were translated into English.

Findings

The mixed-method study is based on survey and interview data that provides a picture of how ways of knowing and ways of teaching are characterized in different disciplines and how sharing within, between and beyond their disciplines are viewed.

Analysis of survey

The data displayed a wide span of disciplines of respondents representing all eight faculties at the University of Gothenburg according to this distribution: Business, Economics and Law (23), Education (18), Fine, Applied and Performing Arts (17), Humanities (17), IT (6), Medicine (36), Science (19), Social Sciences (20). The majority of the respondents had long teaching experience; with a minimum of teaching for two years and the majority for more than 10 years.

Teaching methods in disciplines

Although teachers in different disciplines encounter students both individually as well as in small and large groups, our data showed that the most common teaching method in all disciplines was the lecture, which was used across every discipline. Seminars (95% soft /71% hard, $\chi2(1, N=155) = 17.1$, $p<0.001$, medium effect), workshops (63% soft/31% hard, $\chi2(1, N=155) = 14.8$, $p<0.001$, medium effect), and student presentations (87% soft/64% hard, $\chi2(1, N=155) = 11.7$, $p<0.001$, medium effect) were more used in soft sciences. Laboratories (23% soft/59% hard, $\chi2(1, N=155) = 20.0$, $p<0.001$, medium effect) were more used in hard sciences. Group work (86% soft/72% hard, $\chi2(1, N=155) = 4.7$, $p=0.031$, small effect) and roleplay (27% soft/13% hard, $\chi2(1, N=155) = 4.0$, $p=0.045$, small effect) were more frequently used in soft sciences and response technology exercises (9% soft/20% hard, $\chi2(1, N=155) = 4.1$, $p=0.043$, small effect) more in hard sciences.

Using formative assessment across disciplines

Formative assessment was a procedure that was used across the disciplines. The concept has gained increasing attention in higher education as an intention to stimulate further development as part of the learning process (Black & Wiliam, 2009). However, a comparison between soft and hard disciplines was significant with 64% of teachers in soft disciplines using formative assessment versus only 41% of teachers in hard disciplines ($\chi2(4, N=155) = 14.3$, $p=0.006$, medium effect.

Encouraging meta-cognitive discussions

Meta-cognitive discussions about content and critical discussions as a way to teach conceptual understanding was more frequently used in faculties of education and art than for example in science and medicine. A comparison between soft and hard disciplines showed in the same vein that 72% of teachers in soft disciplines and only 41% of teachers in hard disciplines ($\chi 2(4, N=155) = 23.0$, $p<0.001$, medium effect) encourage meta-cognitive discussions about content.

Sharing in open access

In terms of open sharing, academics were generally in favour of sharing their work. Academic teachers from hard disciplines publish more in open access journals compared to soft disciplines (76% hard/44% soft, $\chi 2(1, N=155) = 15.2$, $p<0.001$, medium effect). 'Life' disciplines compared to 'non-life' disciplines also publish more in open access journals (64% life/47% non-life, $\chi 2(1, N=155) = 4.3$, $p=0.037$, small effect), and pure disciplines reuse others' open material more often compared to applied disciplines (65% pure/44% applied, $\chi 2(1, N=155) = 5.7$, $p=0.017$, medium effect).

Collegial pedagogical discussions

Concerning collegial discussions about teaching, medicine sticks out as a discipline where higher education pedagogy is not as frequently discussed among teachers (53% agree that pedagogy is discussed inside departments and only 31% outside the department). Further, pedagogical discussions among colleagues at the department were not so frequent in other hard disciplines either, whereas teachers in disciplines that are categorised as soft strongly claim that they discuss pedagogies with colleagues within the department. The difference between hard and soft disciplines is statistically significant concerning pedagogical discussions within the department (92% soft/63% hard, $\chi 2(4, N=155) = 13.9$, $p=0.008$, medium effect) but not outside the department (58% soft/45% hard, $\chi 2(4, N=155) = 6.8$, $p=0.147$, medium effect).

Learning about teaching methods

74% reported that the courses in higher education teaching and learning had contributed to new knowledge about teaching methods which they use today. There was a significant difference between how the respondents reported on their learning, depending on type of discipline; 67% from soft disciplines and 84% from hard disciplines ($\chi 2(3, N=155) = 7.9$, $p=0.048$, medium effect) found that the courses in higher education teaching and learning had contributed to knowledge about teaching methods that they were not aware of before and which they use today.

Analysis of interviews

The respondents had an average of 14 years of teaching in higher education, ranging from four to 28 years of teaching experience, which corroborates the survey results.

Concerning the distribution of time of work activities, the respondents were generally both teaching and researching to varying degrees, ranging from 10% to 75% research. Three were only teaching and currently not involved in any research.

The following paragraphs give an account of the analysis of the interviews, together with quotes from the respondents that capture the essence of the respondents' views. Identification of which faculty the interviewee comes from is in brackets.

Defining knowledge

When the respondents were asked to define knowledge, it was generally understood as information being processed in order to become knowledge. In a similar vein, knowledge was expressed as a process: 'an endeavour to know more' (respondent from Education), and includes knowing in the sense of being acquainted with and knowledge as context bound:

> Knowledge can take so many expressions – much of the theoretical knowledge can e.g. be embodied. I think of what we are doing in our institution, where we have research, for example, in the field of craftsmanship, where it is about the knowledge of the hand, which is an area that has been a little overlooked in science. (Science)

> Knowledge depends on context, what context you are in and what is at stake […] it is an attempt to understand and handle the outside world better. (Humanities)

> Collaboration is very important because people from various disciplines have different perspectives on the subject […] new questions and new angles are raised and we can also place the work we have done in new situations and contexts […] (Art)

Threshold concepts

The respondents did not bring up threshold concepts within disciplines as an enabler or constrainer for sharing but rather that disciplinary views or identity potentially constrain collaboration. On the other hand, respondents valued threshold concepts in teaching and learning as transferable between disciplines. On the question about collaboration between disciplines:

> There are some thresholds sometimes because we speak different languages, which is not linguistic so to speak, and you can sometimes have a slightly different view on which research questions should be in focus. (Education)

> I think the whole idea of constructive alignment in education is very good […] I learnt this in the cross-disciplinary professional

> development courses […] It is quite obvious [to align learning objectives to teaching and examination] if you think about it, but it was good to get a concept for it. (Humanities)

Teaching as a vital activity

Although the respondents claimed that teaching is considered less prestigious than research, teaching is still a vital activity for academics in higher education that is also demanding and requiring self-confidence. To the question of 'What is good education?' most respondents (13) had a student perspective in mind, with responses such as 'When students understand my intentions' (Fine, Applied and Performing Arts), 'I'd like to meet the students at the level where they are' (Social Sciences), 'Being enthusiastic and creating an interest, curiosity and a process for learning' (Science). On the other hand, two respondents had a teacher perspective in their response such as 'a competent teacher who encourages students and likes to be a teacher' (Science) and `a teacher who has a good voice and is engaging for students´ (Humanities).

Knowing through participation

Three respondents specifically articulated that knowledge is something that is not only transmitted in teaching but something that is developed through participation:

> I think I received a more open view of how to make acquisition happen and whose responsibility it is. That knowledge is better achieved if the student is active in that search. (Medicine)

> My point is not to directly transfer the knowledge of anything but rather leaving the students with some tools where they can start thinking about the information they get. (Social sciences)

> We should not only inform the students about our research; they must be part of the research environment in a clearer way. As an example, the master's students can be involved in a research project run by the research group—a lot of fun stuff is waiting here! (Art)

Engaging students in decision making

Some of the respondents even highlighted the importance of representation; that teachers give students a chance to be heard and participate in analysis and decision making.

> I think it is very important that you, as a teacher, give those you are dealing with [the students] a voice. Good teaching is dialogical and based on listening […] (Education)

> My point is not to give them the direct knowledge of anything but to leave the students with certain tools to start thinking about the information they receive, what is the basis for the tools we use to end up in the logic or in the rational or in the analytical stance of our positions. (Social sciences)

Impact of courses in higher education teaching and learning

Half of the respondents found that participating in the courses in higher education teaching and learning has changed their view on knowledge (the respondents were equally divided between hard/soft and pure/applied disciplines). The courses contributed with time for reflection on knowledge and pedagogical development. Other respondents suggested that fruitful learning happens in meetings between colleagues from different disciplines and epistemologies within the courses:

> It is clear that, in this way, one is reminded that there are different ways to build knowledge—that there are different ways to teach; that there are different areas of knowledge that place different demands. (Science)

The fact that the respondents made use of the pedagogical ideas achieved from their professional development courses in higher education teaching and learning and published their findings in higher education journals corroborates the results from the survey. Half of the respondents had made use of their ideas for inspiration in their existing teaching practices and half mentioned more concrete applications, such as publishing in higher education journals, introducing new teaching activities, and changing the curriculum.

Teaching down-prioritized

The Swedish higher education system makes academics torn between tasks and since the system makes them prioritize research from teaching, collegiality is at stake. Heavy workloads with increased management and administrative responsibilities are exacerbated by lack of time and resources: ‘Resources are too scarce. It affects the possibility to cooperate and collaborate [about education].’ (Education)

Widening perspective on teaching and research

All respondents claimed that participating in the sharing culture of professional development courses in higher education teaching and learning have an impact on their view on how they teach, such as verifying their current teaching practice, getting new ideas for their teaching, acquiring new angles to pedagogy, and broadening their perspective to teaching.

The courses have also brought a widening perspective of educational research and what research on teaching and learning in higher education entails.

> I thought that it was interesting how persons belonging to other faculties looked upon teaching. […] it has to do with many things such as the subject, discipline and who you are and who you teach. I thought it was interesting when we talked about the difficulties of meeting students and then I realized that we had different views. (Education)

Sharing data

Concerning collaboration, the respondents claimed that sharing data is essential but difficult. Sometimes it is not feasible due to the nature of the data. For instance, qualitative data such as interviews can be difficult to share since it is targeting very specific questions or can be difficult to interpret: 'A lot of data is difficult to interpret and you need to know the patient cohort, why a certain study has been done and how it should be interpreted.' (Medicine)

Another impediment is that it is sometimes not possible to share data due to ethical restrictions:

> In collaboration with medicine, it is very restrictive since it has to do with patient security in different forms. Here I am steered by the ethical guidelines of what may and may not be disclosed. (Social Sciences)

On the more positive side, ethical and democratic reasons for sharing data were brought up, where sharing was suggested to provide a broadened and enhanced analysis:

> The data we have gathered is valuable and should be used fully. I think it is our responsibility to use it fully. We cannot expose ill persons for unnecessary testing and questioning, but should instead use the data we already have, fully. (Medicine)

> I see myself as financed with tax money and what I do during my working hours should benefit society. (Social Sciences)

Finding time for collegial reflection

Teachers also have to find time for collegial reflection and engagement in transforming the curricula, something that is largely dependent on individual academics and not built into the system.

As well as collaborating in a research team, collaborating with colleagues about teaching is suggested to give new perspectives and critically question how teaching is being done and therefore increases quality. Further, on a more personal level, it is more fulfilling to collaborate with others as expressed by a respondent: 'You get oxygen and grow as a person.' (Education)

Publishing open access

The respondents were generally positive to publishing open access (OA) although other aspects may take precedence over openness, such as high quality, reputation, and impact factor. Ten of the respondents were already publishing OA or had considered publishing OA to make their research accessible to a wider audience. Out of the six who had not published OA, two were not working as researchers and the remaining four argued they have a different publishing culture. Six of the respondents brought up the economic aspects for the author of publishing OA as speaking against publishing OA.

Using digital tools for learning

There is an interest by some respondents in digital tools for learning. This example shows how a course has been transformed to an online format to reach more students, a collaborative effort at the department:

> For our beginner course in ancient Greek, about 90% are distance students. […] there would be no more Greek at the university if we did not offer online participation. (Humanities)

When resources are cut due to few campus students in narrow subject areas, teachers have to be creative in finding new ways forward. The above example from Ancient Greek, which was on the verge of being shut down with only a few campus students, has survived when being expanded through an online option.

Nine respondents out of the 16 created digital learning materials, four had committed themselves to vast development projects with online study materials as well as complementary online resources. Seven respondents did not engage much in digital tools, apart from basic digital practices necessary to perform the work as an academic at a university.

Sharing outside university

Most respondents were engaged in public outreach activities and found these activities an important part of their responsibility. A wide range of activities were mentioned, such as giving public courses or lectures outside of university, printing books, blogging, being on the radio and other media, and giving advice to organizations. The respondents had different attitudes towards collaboration with society, such as being part of the teachers' obligations or being of personal interest:

> […] research should not only turn inwards towards the research community. (Sciences)

> I am one of the bloggers at my department's blog and I also participate in the media quite often. I was one of the experts on Swedish radio's panel covering the recent election results, I like to be in radio so I usually say yes. (Social Sciences)

Mutual views on teaching and learning

The results from the interviews show that academic teachers from different disciplines have mutual views on teaching and learning in higher education. However, from the respondents' statements, we could also identify expressions of identity and discrepancies in value. Although resources are scarce, academics see the essence of collaborating with others in, for instance, open sharing and digital tools for learning. They emphasize courses in teaching and learning as arenas for professional development and collegial exchange and stress the importance of engaging in collaboration with society.

Discussion

Societal change, such as complex problems that follow neither national nor disciplinary boundaries (Gilbert, 2016; Nowotny et al., 2001; Wals, 2007), gives reasons for rethinking or transforming 'ways of doing' in universities. Digitization is not only a facilitator for sharing across boundaries but also enabling societal change with large implications for higher education such as being more inclusive (Wals, 2007) and at the same time increasing the risk of making education more individualistic and alienated (Castañeda & Selwyn, 2018).

Universities are unique in the sense that they both produce new knowledge and train future knowledge producers. The latter is a task that no other institution undertakes and therefore universities have a unique role in transforming both education and research so that they become each other's leverage in that transformation. Based on the results of this research, we argue that higher education teachers are open to changes and prepared to engage in a transformation of higher education. From the interviews, it seems that teachers are not only engaged in affirmative changes but in more transformative responses that address the root causes to various problems and make real changes. Based on the data, we suggest that a sharing culture is such a paradigm shift that universities have to engage in for such transformation to take place.

The testimonies do not give a clear picture of the epistemological assumption across disciplines, which can be a sign of difficulties articulating their epistemology since it is a kind of tacit knowledge. The respondents had a reflective understanding of what knowledge can be, and that there are different ways to create knowledge and to learn. Already in the 1970s, Kuhn argued that traditional sciences rely on particular ways of knowing based on data that are not always fixed and absolute, since the way the questions are asked and how data is collected affect the knowing and the interpretation of data is influenced by power relations and shared views (Hyland & Kilcommins, 2009). Our data suggests a disruption of the traditional power relations between teachers and students in involving students in research, giving them a voice and tools to analyse and question our assumptions and problem definitions (Dewey, 1916). Student representation pertains to

boundary-setting in higher education—by being included in the choice of literature and in the analysis of knowledge students are better able to contribute in creating new ways of doing in universities.

In spite of differences in teaching methods identified by the survey, our data provide a picture of university teachers from different disciplines sharing similar assumptions about teaching and learning, such as combining both transmission of knowledge in lectures and development of knowledge in student-centred learning activities, using both of the two metaphors of learning 'acquisition and participation' (Sfard, 1998) and combining teacher-focused and student-focused approaches (Trigwell, 2001).

To our second research question of what academics' views are on exchange within, between and beyond existing disciplines, the survey indicated that higher education is increasingly blended through a combination of face-to-face meetings and use of digital technologies and that it includes teaching across the boundary between academy and society. This type of boundary crossing may improve our ability to predict and form the future and is connected to Shulman's argumentation from 1999 that learning is most powerful when it can be tested, examined, challenged, and improved before we internalize it.

The interviews pointed at a general desire to share. Teachers from different disciplines highlighted a variation of methods for sharing across boundaries between disciplines as well as across the boundary between the university and the society. There were differences between disciplines in openly sharing data and some respondents emphasized that this sometimes is impossible due to ethical issues. In a study by Tenopir et al. (2011), open sharing of data was also reported in many different disciplines such as environmental sciences, physics, social sciences, and IT. Open sharing through open access journals was more common in hard disciplines which is in line with the literature from the field of medicine that several years ago started demanding open access publishing as a requirement for funding (Björk & Solomon, 2012). Some teachers were critical of resource allocation (such as time for collaboration and money for open access publication) for new sharing initiatives to take place at a more general scale.

With respect to the third research question, it was found that the underlying aim of sharing was perceived to be learning to create new ways of thinking and teaching. The findings indicate that new knowledge develops out of collaboration; results that could not necessarily have been predicted before the start of the collaboration and thus opposed to commissioned research. Open sharing of knowledge at the boundary has been described by Engeström and Sannino (2010) as a transformative type of learning based on collaboration across sites. Generally, higher education has been described in a steady move towards greater interconnectedness and interdependence (Blessinger & Anchan, 2015) and have engendered a loosening of disciplinary boundaries in the development of new curricula (Hannon et al., 2018). The introduction of digital technologies has been powerful in that transformation of higher education, and open sharing through peer

production that utilizes the interactive potential of the Internet, Web 2.0, is one kind of trading zone for sharing that we want to highlight based on the results.

The data also made evident that there is a trading zone inherent within continuing education teaching and learning courses for colleagues from different disciplines. Our respondents reported that the courses not only were eye-opener for how they can rethink the way they teach but also for their perception of knowledge and teaching. In fact, the trading zone in which exchanges take place also provided the tools, such as a new 'language', that make exchanges possible. Thus, teachers share their epistemological assumptions and perspectives on teaching as well as research methodologies with colleagues, which is the horizontal direction according to Engeström and Sannino (2010). Exemplified by views on ethics related to open sharing, the trading zones are also used for sharing vertically, which is more about identity and moral commitments (ibid.) and about how disciplines value differently the forms of evidence and argument for a certain pedagogy in their effort to address concerns in their teaching practices.

Limitations

This study is focusing on teachers in higher education. Further studies could explore how students from different disciplines view disciplinary delimitations and sharing and how they can voice their rights and inquiries.

We rely on academic scholars self-reporting their own experience and understanding of their subject area and views on teaching and learning. They are expected to have a special interest in pedagogy and may not represent the average teacher. Further, the teachers may have been assigned to a specific teaching approach, for example lecturing which, in turn, may affect the data and therefore not reflect the teacher's personal view on teaching and learning.

Conclusion

Teachers in higher education understand the value of sharing across boundaries as a way forward for universities to expand and diversify their collective range of expertise to create robust and relevant knowledge and to keep its legitimacy in society. However, at system level universities may need to provide resources (such as time for collaboration and money for open access publication) to promote sharing across and beyond disciplines and thus scaffolding transformative changes.

The provision of trading zones between disciplines, exemplified with professional development courses in higher education in teaching and learning, open practices, and collaboration between academic disciplines and society, give teachers a new language to express their oftentimes tacit view on knowledge and teaching. Such trading zones can facilitate sharing among peers and have the

potential to develop knowledge, identity and moral commitments necessary to address societal challenges.

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Appendix 1. Survey and interview questions

Survey questions

1. Which Department do you belong to?

2. In which discipline / subject (subjects) do you work?

3. How many years have you been teaching in higher education?

0-1 year
2-5 years
6-10 years
more than 10 years

4. What do you use in your teaching (more options possible): (Lecture, Seminar, Group work, Workshop, Lab, Case-method, Roleplay, Exercise, Flipped classroom, Student presentation, Peer response, Problem Based Learning, Response technology exercises, Other)

5. I have the following views regarding openness in my work. Specify those applicable (more options possible):

I share my ideas with my colleagues
I share my data openly on the internet
I have published in open access journals
I reuse others' materials
I do not work actively for openness
Other

6. How higher education pedagogy is discussed within my discipline (Likert scale; I strongly disagree, I disagree, I am neutral, I agree, I fully agree)

I discuss pedagogical questions with my colleagues at my department
I discuss pedagogical questions with my colleagues outside of my department

7. Below you find 5 short statements about pedagogical principles, based on Laurillard (2012). Please, specify to what degree these statements match your teaching situation (Likert scale; I strongly disagree, I disagree, I am neutral, I agree, I fully agree)

I align the learning objectives to students' earlier experiences
I use assessments to tap understanding, not facts, isolated skills nor surface knowledge
I use formative assessment to make student's thinking visible during the learning process
I provide theoretical exercises with tasks and feedback that reveal student thinking
I encourage meta-cognitive discussions about content

8. Did the courses in higher education teaching and learning contribute to knowledge about teaching methods that you were not aware of before and which you use today? (one option possible)

Yes, through the course activities
Yes, through other course participants
Yes, through both course activities and other course participants
No, I did not learn any new teaching methods that I did not know of before
Other

9. Did the courses in higher education teaching and learning contribute to knowledge about pedagogical perspectives to learning that you were not aware of before? (one option possible)

Yes, through the course activities
Yes, through other course participants
Yes, through both course activities and other course participants
No, the courses did not contribute with any new perspectives that I did not know of before
Other

10. Have you implemented your idea from your independent work in the courses in higher education teaching and learning and, if so, can you briefly describe the impact it has had?

11. Is there anything else you would like to add?

Interview questions

1. Discipline?

2. When did you defend your thesis?

3. How many percent of your employment is devoted to research?

4. How long have you been teaching at university level?

Research: Ways of knowing

5. Do you collaborate with colleagues on research within your discipline? outside of your discipline? How? Why? What is your view about such collaboration? For your: discipline, unit for yourself?

6. Do you share data with colleagues from your discipline? Outside of your discipline? Give examples. What is your view about sharing research data? Pros and cons?

7. Do you publish in open access journals? Why /why not?

8. What is knowledge?

9. Did the PIL-courses change your view on knowledge?

Education: Ways of teaching

10. What is good teaching?

11. Did the PIL-courses change your view on teaching?

12. Do you collaborate with teachers inside/outside of your discipline? How? Why? What is your view about collaboration on teaching? For your discipline and for yourself?

13. How do you disseminate your educational work among colleagues?

14. Do you engage in public outreach or contract teaching? Give examples

15. Do you engage in development of digital learning material for your courses? (solitary or in collaboration?) Why? Give examples.

16. Do you use external online resources in your teaching? How? Why? Give examples.

17. Do you assist students in using digital resources in teaching your students? How? Why? Give examples.

18.Have you made use of your pedagogical ideas from the courses? If yes, how? (For your discipline and for yourself)

19. Has your understanding of research and teaching in higher education been influenced by your collaboration with other colleagues from other disciplines in the courses? If yes, how? (For your discipline and for yourself)

Studying international doctoral researchers: nexus analysis as a mode of inquiry

Melina Aarnikoivu

Abstract

In this paper I argue how nexus analysis (Scollon & Scollon, 2004), as a holistic, qualitative mode of inquiry, can offer a fruitful activist research approach to study international doctoral researchers. To do this, I will introduce and explain the core concepts of nexus analysis and afterwards empirically demonstrate how nexus analysis can be done in practice by presenting a case study on international doctoral researchers in a particular nexus—at a Finnish university. The overall aim of this paper is to present nexus analysis as a viable alternative for those higher education researchers who want to study communication, interaction, and language-related challenges of international doctoral researchers from a bottom-up perspective and, in this way, potentially even challenge the existing decision-making practices.

Keywords: doctoral education, qualitative methodologies, mediated social action, nexus analysis

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Introduction: what is nexus analysis?

> Whatever issue you study, you will become deeply involved with it. The first place to look for that issue is in your own life, your own actions, and your own value system. What do you wish somebody would do something about? What do you think about to be changed in the world in which you regularly live? (Scollon & Scollon, 2004, p. 154)

In 2015 I embarked on an ambitious personal journey with the above idea in my mind as a starting point. I had decided to start doing doctoral studies—on doctoral studies. This resulted in four sub-studies, which all focused on *mediated social action* (Scollon & Scollon, 2004) that is involved in doing a doctorate. I conducted these interconnected studies by using *nexus analysis* (Scollon & Scollon, 2004) as

a mode of inquiry. Nexus analysis focuses on *action*, and allows the researcher to examine the linkages and relationships between different types of semiotic resources and social issues (see also Blommaert, 2010; Hult, 2015). It is built on the foundations of mediated discourse analysis (MDA), which specifically focuses on social action: 'any action taken by an individual with reference to a social network' (Scollon & Scollon, 2004, p. 11).

Due to its developers'—Ron Scollon and Suzie Wong Scollon's—background in intercultural communication and discourse analysis, nexus analysis has previously mostly been used by scholars in applied language studies and communication studies (see, e.g., Hult, 2010; Jocuns, 2018; Tapio, 2013). While nexus analysis has also been used by some scholars in higher education contexts (see, e.g., Aarnikoivu et al., 2019; Hult, 2015; Scollon & Scollon, 2004), it has mostly been ignored by researchers studying international students (for an exception, see Gaisch, 2014). However, as it is difficult to find a study on international doctoral researchers that does not at least in some way address the topic of communication, interaction, or language, it is striking that nexus analysis or other approaches, methodologies, and theories borrowed from linguistics or applied language studies are mostly absent in this field of interest. However, as I will go on demonstrating, nexus analysis would be a highly suitable mode of inquiry for a variety of disciplines beyond applied language studies, as it does not specifically focus on *language* or *language use* but rather on mediated social action, such as doing doctoral studies.

In this methodologically-oriented paper, I argue why nexus analysis is a particularly compelling alternative for studying *international doctoral researchers*[7], who typically are a very heterogenous group—something which is often ignored in the research literature (Choi, Nieminen, & Townson, 2012; Fotovatian, 2012). A feature that many of them share, however, is that they often have to navigate different types of social settings by using a language that is not their native one (Campbell, 2015; Ku, et al., 2008; Zeivots, 2020). Several studies have shown that an unfamiliar linguistic or cultural environment leads to challenges with socialisation, for example (Anderson, 2017; Elliot, Reid, & Baumfield, 2016a; Elliot et al., 2016b). Challenges of non-English speaking background (NESB) doctoral researchers who study in English-speaking countries are particularly well-reported (see, e.g., Campbell, 2015; Li 2016; Zeivots, 2020), although it is important to bear in mind that an international doctoral researcher can also be a native English speaker studying in a non-English speaking country (see, e.g,. Sakurai, Pyhältö, & Lindblom-Ylänne, 2012).

To construct my argument, I will show how nexus analysis enables the analyst to combine different methodologies and methods of data generation and, in

[7]In this paper, I primarily use the term 'doctoral researcher', according to the arguments I make in my dissertation (Aarnikoivu, 2020a, Chapter 3.2.3). However, when discussing the relevant research literature and the empirical context of this paper, I also use the term 'doctoral student' or 'international student', as these terms are used in the previous literature and by the studied university.

this way, to form and ask new type of questions to highlight issues which might not have been noticed before by the social actors of the studied nexus. I will also demonstrate how nexus analysis can provide a bottom-up approach to studying different groups, such as international doctoral researchers. To do this, I will first introduce the core concepts of nexus analysis, as well as its position among other activist research approaches. Afterwards, I will present how nexus analysis can be done in practice by presenting a small case study on international doctoral researchers in a particular nexus—in Finland. Finally, I will conclude the paper by discussing how nexus analysis can be used to address and ask critical questions regarding international doctoral researchers and, ultimately, to potentially challenge the existing decision-making practices at a specific department, faculty, or university.

The core concepts of nexus analysis

In terms of methods and methodologies, nexus analysis is a highly flexible mode of inquiry. Although it typically includes at least ethnography and (critical) discourse analysis, it does not have to be limited to them. Besides providing a multitude of methodological possibilities, nexus analysis also offers a range of theoretical concepts. The most crucial ones are *social action* and *social practice*: When a specific social action happens repeatedly, it becomes a social practice. Both of these occur within an intersection, or *nexus*, of

1. **discourses in place** (discourses which, in a specific moment, circulate a particular material place where the studied social action takes place);
2. **interaction orders** (all the possible social arrangements that are being used to create relationships in social interaction; see also Goffman, 1983). (Scollon & Scollon, 2004);
3. **historical bodies** (roles that different people embody related to their own personal experience, including one's goals, motivations, and personal attributes).

These three key elements intersect within the nexus under study, such as *doing doctoral studies*. Examining these three units of analysis allows the researcher to explain complex social phenomena that result in patterned social practices (Norris & Jones, 2005). The focus of research should be both on smaller and larger entities, as well as on their linkages. Most importantly, the researcher should not 'get stuck' on single observable moments or participants but instead widen their perspective before 'zooming back in' again (Hult, 2010; Pietikäinen et al., 2011; Scollon & Scollon, 2004).

However, to identify the relevant moments or participants, the analysis begins with 'engaging the nexus of practice' (Scollon & Scollon, 2004), the first of the three steps of nexus analysis—*engaging*, *navigating*, and *changing* the nexus of

practice—which I will explain in detail next, one by one. These steps will also form the main body of this paper before the discussion and the conclusion. It is important to note already at this point, however, that it is the final stage—changing—that is the ultimate goal of doing nexus analysis, which makes nexus analysis an activist research approach. As there are other several such approaches available for researchers, such as action research (see e.g. Given, 2008; Greenwood & Levin, 2007) and critical action research (see, e.g., Davis, 2008), I will not attempt to argue that nexus analysis would somehow be better than other approaches. Instead, it is *one possible mode of inquiry* among others. What makes it different from other activist research approaches, however, is its focus on the relationship between *language* and *social action* specifically. For this reason, it is a particularly intriguing mode of inquiry to study social actions where language plays such a prominent role, such as doing a doctorate as an international doctoral researcher.

The first steps: engaging the nexus of practice

To demonstrate the potential and analytical power of nexus analysis in higher education research, and research on international doctoral researchers in particular, I will present a small-scale nexus analysis that I conducted at a Finnish university as part of my dissertation (Aarnikoivu, 2020a). The dissertation itself is a larger-scale nexus analysis on doctoral education. At the start of my fieldwork (which took place between 2015 and 2017), I was focusing on doctoral researchers and supervisors as the main social actors within the focal nexus. However, as I was interviewing and observing doctoral researchers in Finland and abroad[8], I began noticing that the international doctoral researchers partially spoke about different issues than the participants who were doing their studies in their country of origin, in Finland. Because of this contrast, I decided to 'zoom in' to this topic and generate more data on international doctoral researchers in particular.

Choosing one's research topic and establishing one's position in the studied community are both part of engaging the nexus of practice. However, this stage also includes the recognition of the critical social actors, events, discourses, and objects that are relevant for the studied phenomenon. Next, I will discuss these critical social actors and discourses on a more general level with references to relevant research literature, and then in terms of the empirical context of this paper. This is an important step, as no social action happens in a vacuum but is always connected to wider discourses circulating in society (Scollon & Scollon, 2004), which is also shown by the following body of literature.

[8]I generated the dissertation data in two different settings: At a Finnish university and at a Central European research institute, where doctoral researchers of different nationalities work physically but are affiliated with different universities around the world.

The heterogenous group of international doctoral researchers

The definition of 'an international student' is somewhat fluid (Cree, 2012): While international students are often referred to as students who have moved to a foreign country to study for a fixed period of time (Elliot et al., 2016a), there are not many shared characteristics that apply to all international students, however. They all have their own historical bodies (Scollon & Scollon, 2004); they come from various backgrounds and education systems, speaking multiple languages, having their own motivations, expectations, and fears regarding their studies abroad (Ku et al., 2008; Manathunga, 2014). Furthermore, especially for an international doctoral researcher, moving to another country is often for an open-ended period of time, or leads to processes of complex mobility even though the doctoral students may not realise it at the time of locating to a new country (Aarnikoivu, 2020b; Hoffman, 2009).

Although the heterogeneity of international students is acknowledged in research literature (Asmar, 2005), it is also often ignored (Choi et al., 2012; Fotovatian, 2012; Manathunga, 2014). Instead, international students are all too often regarded as a homogenous mass with deficiencies in their English skills or having passive learning styles (Choi et al., 2012; Ryan & Carroll, 2005). At its worst, international students are seen as a group which is not interested in academic achievement but merely a residency of the target country (Fotovatian, 2012), when in reality their motivations to study abroad are varied: pursuing academic or professional growth, intellectual stimulation, economic benefits, enhanced social status, or greater political freedom or stability (e.g., Kim, Bankart, & Isdell, 2011; Zhou, 2015), for example.

Thus, the only feature that all international students share is being from somewhere else. This causes them to be categorised differently for administration purposes ('local' vs 'international students') and to be subjected to fees which are often higher than those of local ones (Fotovatian, 2012). 'International student' as a label might also emphasise the social, cultural, and physical space between students, constructing two separate identity groups (ibid.). Benzie (2010) characterised the negative consequences of 'otherness' as 'the process by which the discourse of a particular group defines others in opposition to itself and tends to make value judgements based on stereotyped opinions about that group as a whole' (Benzie, 2010, p. 450). The concern for the lost voice and silencing has also been brought up by several others: In their article on international students' perceptions on studying in an unfamiliar linguistic and cultural environment, Ryan and Viete (2009) criticised the marginalising nature of the power relationships that are hidden in different types of interactions within institutions. According to them, suppressing the voice of international students can lead to 'an intense loss of self-esteem and identity' (Ryan & Viete, 2009, p. 307). As Fotovatian (2012) also pointed out, this is particularly important when considering that identities are negotiated in language interactions (see also Miller, 2004; Tran, 2013), which international students often do in a language that is not their mother tongue. Finally, Manathunga (2014) has discussed power issues in the context of intercultural postgraduate supervision. She

argued that existing guidebooks on intercultural supervision do not adequately take into account the social, cultural, historical, and geographical contexts that surround intercultural supervision. She also pointed out some of the problems in the discourses circulating postgraduate supervision, which seem to paint a somewhat tidy picture of supervision, leaving out the messiness of different cultures, identities, and histories coming together. In nexus analytical terms, these could be called 'ignored historical bodies' within the 'relevant discourses in place'.

Going back to Benzie (2010), the 'otherness' does not only include the issues of language and interaction, however. Higher education institutions are globalised and function as a stage for several different types of student interactions that also involve different cultures, questions of power, membership, and legitimacy (Fotovatian, 2012). Therefore, all contexts of interaction are also related to negotiations of language, power, and culture (Norton, 2006), thus making higher education institutions and the interactions happening within them a place where social capital (Bourdieu & Wacquant, 1992) is negotiated. What is equally important, however, is the cultural capital (Bourdieu, 1986), entailing the embodied state (consciously acquired properties of the mind and the body), the objectified state (acquired objects such as art and books) and the institutionalised state (acquired educational qualifications). Both of these forms of capital, social and cultural, both connect people with each other and distinguish individuals from each other.

As this brief literature review on international students and doctoral researchers illustrates, there are complex power dynamics and patterns of interaction happening within higher education institutions, which have both direct and indirect consequences for international doctoral researchers, as they navigate within the institutions they are studying at. In nexus analytical terms, the perceptions and expectations regarding the *interaction orders* (how and to whom to communicate in a university and in which language) and *discourses in place* (what is considered important, or foregrounded, in a given situation and what is not) might be very different for those who have a different kind of *historical body* (personal goals and dreams, cultural, social, and geographical background) than those that are familiar with the environment. Next, I will discuss some potential consequences for such tension by presenting a small case study that I did at a Finnish university, to provide an empirical grounding for my main argument.

The empirical context: the evaluation of doctoral training[9] at a Finnish university

Before moving on to describe the case-study used in this paper, I want to clarify that, ideally, doing nexus analysis is a long-term project consisting of several smaller studies—something that the Scollons also did back in Alaska 40 years ago.

[9] Throughout this article, I use the phrase "doctoral training" instead of "doctoral education". While these two terms differ in their meaning in English, in Finnish there is only one word for training and education: "koulutus". The university under study has chosen to translate "tohtorikoulutus" (doctoral education) into "doctoral training" in its English documents and websites, which is why I use this term as well.

Nevertheless, it is possible to utilise nexus analytical concepts and methods to examine a smaller event or action. Within the scope of a single article, this is what I have chosen to do. Moreover, it is also customary for a nexus analyst *not* to specify any research questions before the beginning of data generation. Going back to my earlier point about the Finnish-born and international doctoral researchers talking partly about different things, the only guiding question for me at the beginning of this particular study was: why is it so?

Based on my preliminary observations, an interesting event I decided to 'zoom in on' was the evaluation of doctoral training, which took place at the university in spring 2016. The evaluation was part of the implementation of the operational agenda for the university's strategy, initiated by the university's Science Council and the Graduate School Steering Board. The reasons why I considered this event so important were: First, its purpose was to make sure that the university graduate school operates according to the principles and recommendations set by the University Board and the Graduate School Steering Board and that the doctoral training at the university is organised accordingly (University of Jyväskylä, 2016). In other words, the importance of the evaluation on the institutional level was significant. Second, the evaluation aimed at 'recognising the strengths and development needs of doctoral training at the University, promoting the sharing of good practices, improving the quality of doctoral training, and increasing understanding of how doctoral training is implemented in different fields of science' (ibid., p. 1), bringing a very practical and useful dimension to the evaluation from an individual doctoral researcher's perspective. Finally, based on the results of the evaluation, a development plan was created to improve the university's doctoral training between 2016 and 2020. This meant that the evaluation process largely determined how doctoral training was going to be shaped in the next few years, not only affecting current doctoral researchers but also future ones. This development plan was also to be assessed towards the end of the abovementioned period, which further emphasises its importance to the university.

The evaluation process consisted of three phases: a) self-evaluation of doctoral schools, b) school-specific evaluation discussions, and c) discussion among all doctoral schools about the future. Participants of these phases included doctoral researchers, supervisors, and the management of doctoral schools and doctoral programmes. The evaluation documents include the final report (in Finnish only), its summary (in Finnish and English), as well as the self-evaluation reports. Additionally, an event called 'the Future of Doctoral Education' was organised for doctoral researchers and supervisors in May 2016, where the preliminary results were discussed. This event also formed the third phase of the evaluation. The data are summarised in Table 1:

Type of data	Details
Official university documents (freely available online)	Degree regulations of the university (in Finnish and English), 24 pages, valid since August 1st, 2015.
Reports (freely available online)	**Evaluation of doctoral training at the studied university: full report (in Finnish) and summary (in Finnish and English), November 30th 2016**
Events: Video recordings (freely available online), PowerPoint slides, and field notes	Three events organised for doctoral students: a) 'Introduction to doctoral studies', May 2015, **b) 'Future of Doctoral Education', May 2016**, and c) 'Graduate School information session', November 2016.
2 semi-structured interviews	With two international doctoral researchers from outside the EU, lengths of 83 and 91 minutes. The interviews were part of a wider interview data generated at the studied university, which I had already conducted prior to this particular study; they functioned as a launching point for this study.

Table 1. The data (the 1st round of analysis).

It should be noted that while all of the data has to be analysed in the first round of analysis (by using content or discourse analysis, for example), not all of the generated data has to be included in the following rounds of analysis. For the purposes of this paper (the 2nd round of analysis), I analysed the data marked in bold: the full report (in Finnish) and its English summary, Event B, and the two semi-structured interviews, which also prompted me to zoom into the topic of international doctoral researchers in the first place.

Ethical considerations

For the interviews I asked my participants to sign an informed consent form. I also had approval from the Head of Department where I generated the interview and other data for my dissertation. Most of the university-wide data was publicly available. To use the documents that were not public, I contacted the Graduate School Coordinator to ask for additional permission. After finishing my preliminary analysis, I also organised a meeting with the Coordinator to discuss the manuscript draft and analysis to confirm I had not misunderstood any aspect of the evaluation.

The second stage: navigating the nexus of practice

When navigating the nexus of practice, the analyst continues examining the discourses, social actors, actions, objects, and events which they first identified when engaging the nexus of practice. In practice, this stage entails a critical analysis of each of the three aspects that form mediated social action, which intersect and define a particular nexus, as explained previously: 1) discourses in place, 2) interaction orders, and 3) historical bodies. By examining these three aspects of social action, it is possible to 'make sense' of the issues which the analyst paid

attention to at the beginning of their research process. To demonstrate how to navigate a specific nexus of practice, I will show how I navigated the topic of 'international doctoral researchers' during spring 2016.

1) Discourses in place: what is talked about in relation to the university doctoral training?

The first issue I focused on was the *what:* what was talked about during the evaluation and the specific event of 'Future of Doctoral Education', which took place in May 2016? The topics that the Graduate School Coordinator had chosen to be the PowerPoint slide headlines—something they had decided should be discussed during the event—were as follows: *student recruitment*; *student guidance and supervision*; *supervision document and follow-up group*; *integration in the research community*; *career planning*; *degree requirements*; *doctoral degree funding*; *part-time students*. These nine features can also be considered to be some (but not necessarily all) of the relevant—or *foregrounded*—discourses in place linked to the university's doctoral training: the discourses which, in a specific moment (on May 16th, 2016), circulated and intersected within a specific material place (an auditorium at the university) where a specific social action (evaluation of the doctoral training)—or part of it—took place. The reason they are not necessarily *all* the discourses is because they are predetermined to a great extent; they are based on the evaluation which, at the time of the event, was almost completed. The evaluation and the topics that were selected (or de-selected) were chosen by a specific group responsible for implementing the evaluation. Moreover, the slides for the event were created by one person, the presenter, leaving very little room for other topics or discourses to be discussed or used in the event.

When taking a closer look at these discourses presented above, both *doctoral students* and *part-time students* as specific student groups are part of the relevant actors but *international students* are not. However, 'international students' were mentioned in the final report of the evaluation. In a later discussion with the Graduate School Coordinator, regarding the contents of this paper, they said that not talking separately about 'international students' was partly a conscious choice, to avoid separating them from the group of all doctoral researchers. This is in line with the critique by Fotovatian (2012), according to which the label of 'an international student' might emphasise the social, cultural, and physical space between international and local students and thus construct two separate identity groups. However, it is not in line with other parts of the evaluation which do talk about 'international doctoral students' or 'international applicants', illuminating that they are, in some way, a separate group that has to be considered. Neither is it in line with the reality in which the international doctoral researchers live and work, as will be seen in the further analysis.

2) Interaction order: who are discussing the university doctoral training?

The next aspect of social action is *the interaction order* (all the possible social arrangements that we use to create relationships in social interaction) (Scollon &

Scollon, 2004, p. 13), about which I made a few key observations. Most of the analysed event consisted of presentations; one person at a time speaking to the audience. Occasionally some of the presenters engaged with the audience by reminding them that if they have any questions, they are free to ask them. After four speeches/presentations, however, the interaction order changed: the audience members were divided into smaller groups and asked to move into other rooms of the building to discuss two questions, assigned to them by the second speaker of the day. After the small group discussions, everyone returned to the main auditorium to share the results of their group discussions. This final part of the event was clearly more interactive. Although also initiated by the organisers, this change in the interaction order illustrates that they wanted and encouraged *participation* and *dialogue*; to hear what thoughts the preliminary results and questions following the presentation had awoken in the audience members.

It should also be noted that prior to the event, there were interviews between the evaluation organisers and doctoral researchers, supervisors, and faculty management (see Table 2 below). In other words, it was not the first time that those responsible for the evaluation wanted to reach out to other relevant social actors involved in the doctoral training. However, as with the discourses in places presented above, the social actors were also chosen by a specific group—those who implemented the evaluation. In the final report it is stated that during the evaluation, 60 doctoral students, 42 supervisors, and 22 people in doctoral school management positions were heard. The groups that participated in the evaluation in each of the three phases were the following:

Phase of the evaluation	**Participants of the phase**
a) self-evaluation of doctoral schools	'doctoral schools', freedom in choosing how to implement the self-evaluation
b) school-specific evaluation discussions	• 'chairs' and 'secretary', • 'doctoral students', 'English-speaking doctoral students', 'supervisors', 'English-speaking supervisors', 'management of doctoral schools and programmes' All participants are named in the final report; The participants of each group were 'randomly chosen' by the doctoral school, however, making sure that 'different types of student groups were represented as well as possible'.
c) discussion between doctoral schools about the future	Organised by the Graduate School Steering Board; All doctoral students, supervisors, and management of doctoral schools were invited to the event; 'The steering board plans the structure and themes of the discussion after self-evaluations and evaluation discussion'.

Table 2. Participants of the evaluation.

It was explicitly stated here that it is the Graduate School Steering Board (consisting of eight professors from different faculties) who planned the structure and themes of the discussion. This connects to the discourses in place, discussed above, as follows: Not only was it the *what* (to discuss in the evaluation/the studied event) that was decided by a smaller group of people but also the *who* (to ask about, to discuss with). While this is not a question whether this way of implementation is right or wrong, or good or bad, explicitly zooming in on these features of mediated social action provides the basis for the critical examination of international doctoral researchers and their studies in Finland. Specifically, it allows an analysis of *what* and *who* are *not* being talked about, and *why*. Finally, and most importantly, nexus analysis also allows the researcher to gauge the extent to which some of the relevant social actors possess an awareness of any of these issues, as well as any implications that might be caused because of the potential lack of awareness. This will be illustrated when examining the final part of social action, historical bodies, and how they relate to the first two parts; discourses in place and interaction order.

3) Historical bodies: are the unique needs of international doctoral researchers recognised?

As Norton (2001) has stated, in order to develop higher education pedagogies and studies within the institute, students' background and motivations have to be taken into account. By using the core concepts of nexus analysis, it is the *historical body* which refers to the different roles that people have related to their own personal experience, including one's goals, motivations, and personal attributes (Scollon & Scollon, 2004, p. 13), such as one's social, cultural, historical, and geographical background (Manathunga, 2014), which were discussed previously in relation to international doctoral researchers and power.

In the context of this study, we therefore need to consider the historical bodies of those social actors who were involved in the evaluation process (see Table 2) but also those who are the interest of this study—international doctoral researchers doing their doctoral studies at the studied university, as well as their supervisors and colleagues. In the studied event, *Future of Doctoral Education*, several topics and groups of social actors were brought up by the presenters, as listed in an earlier section of the paper. A group that was almost completely missing from the discussion, however, were the international doctoral researchers: During the several hour-long event they were mentioned twice; when talking about the doctoral degree funding. One might argue that international doctoral researchers belong to the larger group of 'doctoral researchers' and there is no particular need to distinguish them from the main group. However, there are a number of issues that concern 'local' doctoral researchers but not international ones, and vice versa. These issues are caused mainly by laws and regulations set by higher-level actors such as the universities, funding agencies, and the state, all allowing or restricting access to the Finnish (or any) higher education system (see also Aarnikoivu, 2020b). For example, when mentioning international doctoral researchers in their presentation, the Graduate School Coordinator stated that the lack of funding is

particularly problematic for international doctoral researchers because they might not understand that receiving a doctoral study position does not mean automatic funding from the university. They also pointed out that a sudden ending of one's funding might lead to 'a difficult situation'.

If looking at funding from an individual international doctoral researcher's point of view, this indeed is the case, as the following examples illustrate. The first is from an interview with one of the two international doctoral researchers participating in the wider dissertation study, who, at the time of the interview, had funding but was not sure if it would not be enough for the final stage of their studies:

> Excerpt 1 (emphasis added): So**, my residency is tied to the funding** […]. As [a country] citizen it's not dire for me, it's not like I will be made to leave the country the moment my residency expires. However, **it would be difficult for me to stay longer without funding. I have to find another permit and I would have to justify I have certain amount of money or I could just hang around, about three months and trying to figure things out**. I don't think [that] it wouldn't be the case of 'you're gonna be deported from the country' but **it would make things very difficult if I wasn't near completing and have more funding**. […] And I guess the thing is the summary part and the actual defence, it takes time to wait for the reviews to come back and to plan the actual defence as in getting the opponent and the timing and so on, for example I know someone who's waited over six months for their reviews to come which is not policy. So **for them, cause they're Finnish it wasn't like having to worry about residency and visas** and so but still there's this feeling of, things stuck and not knowing what to do.

Even if this participant did their everything to secure the funding for the rest of their studies, in theory it is possible that, in case they do not get funding, they would have to return to their country of origin and possibly quit their studies, which would be an enormous waste of resources; their own and the university's.

In their nexus analysis of the events involving their own experiences of pioneering computer-mediated communication in Alaska in the late 1970s and early 1980s, the Scollons (2004) discussed the topic of gatekeeping. The Scollons hoped that their studies could provide help with developing strategies for dealing with potential structural barriers restricting educational equity within the university system. As they pointed out, universities (as bureaucratic and technological institutions) control the flow of people into the universities as well as through them (Scollon & Scollon, 2004, p. 109). For instance, to become a doctoral researcher

and to acquire a doctoral degree, there are several smaller gates, as well as gatekeepers: the university (who accepts doctoral researchers, organises the studies in the way they desire, and finally grants the degree), supervisors (who advise doctoral researchers on their doctoral path as a whole), the funders (the university or a foundation who enable doctoral students to finance their studies), and journal reviewers or thesis pre-examiners (who evaluate whether the work submitted by doctoral researchers is good enough in terms of existing standards). For international doctoral researchers, however, there is one additional gatekeeper, namely the state, which was neither mentioned, nor seen, except in the interview data—but purposefully and/or inadvertently excluded within the discourses in place and the interaction order. While for a Finnish-born doctoral researcher a closed funding gate means they either have to continue their research work for free or to find another job while looking for another source for funding, for an international doctoral researcher it means not only that they have to interrupt or possibly give up their ongoing work but also potentially leave the country (on mobility and residency issues of early-career scholars, see also Guth, 2008; Roksa et al., 2018).

While the second interviewed doctoral researcher was not equally worried about their funding, they expressed their will to stay and work in Finland after completing their doctorate but were uncertain if they could succeed in this:

> Excerpt 2 (emphasis added): After PhD I'd like to continue working in academia, to be a researcher but now it is quite tough. I don't know if I'll be able to continue because I don't know whether I can have a chance to have a post-doc position… **I like living here, this is not the first country that I've moved to, I've been living in different countries but I like Finnish people, I like the Finnish culture, I'd like to stay here for the rest of my life** and to work in academia but I don't know if I can succeed or not.

This kind of complex mobility pattern is connected to Hoffman's (2009) critique on the definition of an international student and them changing countries for a fixed period of time. Instead, according to Hoffman, relocating to a new country is often open-ended and can easily lead to complex mobilities (such as with this participant who had lived in several different countries), though they might not realise it at the time of relocating. This suggests that conventional and narrow definitions of international (doctoral) mobility might prevent us from actually understanding the types of challenges missed by the actors driving this process. Although mobility patterns might be simple for some, that is not the case for everyone. This type of rethinking, in turn, encourages us to create a set of new questions related to doctoral education. These questions will be presented in the next section when discussing the final stage of nexus analysis, *changing* the nexus of practice.

The final stage: changing the nexus of practice

The final stage of the multi-level analysis process is *changing* the nexus of practice, which is also the ultimate goal of nexus analysis. Scollon and Scollon (2004) also call the stage 'an intervention' without a positivist solution: the purpose of doing nexus analysis is not to answer a specific set of ready-made research questions, or to re-examine established topics, but rather forming and asking new and better questions within nexuses that are not recognised as such, especially by the participants identified within a specific nexus. In this way, 'the results' of a nexus analysis do not consist of answers, but new questions asked by the analyst, and actions initiated by them.

Coincidentally, the idea of *change* was also communicated by an audience member in the event analysed above. During the final discussion, they asked how the results of the evaluation were going to affect the discussed issues in the future. They also wondered why they had a feeling that the university was asking the same things over and over again, evaluation after evaluation. Although perhaps not realised by the organisers of the event, or even by the person who asked the question, this point was extremely important. It highlights the same key issue discussed in the analysis presented above; the issue of power and gatekeeping:

- *Who* (interaction order) gets to decide *what* (discourses in place) is being evaluated or discussed in relation to doctoral education or training—and international doctoral researchers in particular—at universities? *Why* them?
- *How* are all these decided, and *how* do the decisions affect the topic that is being discussed?

Both the ones who implement such evaluations and the doctoral researchers these evaluations affect share the same goals—mapping out the current state and challenges of doctoral education and developing and improving its different aspects. Because of this it is crucial to ask better questions, based on an evolving understanding, rather than the questions that have been asked several times before. In this way, we might not only proceed with the study of international doctoral researchers but to highlight different issues in decision-making and power relations.

In addition to forming and asking new questions, the analyst also has an opportunity to affect the studied nexus with their own actions, as they are heavily involved in the action. Since completing the data generation in 2017, I have actively sought to participate in several developmental activities regarding (international) doctoral researchers where I have shared the results of this analysis:

- Presenting at a doctoral seminar of my department in November 2018 and again in September 2020.
- Having a discussion with the pedagogical leader of the department in September 2020.

- Participating in a meeting with two faculty representatives in November 2020, as well as taking part in a follow-up meeting with other doctoral researchers of my department. A set of developmental suggestions for the department and the faculty are currently being drafted.

Although most of the suggestions are targeted at the department where I generated the majority of the university data, I have also now been invited to a university-level meeting, which takes place in January 2021. In this meeting, I will be presenting the results of this and other studies included in my dissertation. Finally, I am now developing my future research agenda based on the work I started with the analysis presented in this paper. It is exactly because of nexus analysis and the tools it has provided me that I have been able to do all that as an early-career researcher. This also illustrates the power of nexus analysis as an excellent 'bottom-up' research approach.

Discussion

Splitting the evaluation process analysed above into three intersecting aspects of social action (discourses in place, interaction orders, and historical bodies), it is possible to shed light on the complexity of some of the mechanisms that are affecting international doctoral researchers' lives: Coming from a different linguistic, cultural, or educational background than many of their doctoral researcher peers, international doctoral researchers might have less control and options to participate or voice their opinions if invited to do so. Instead, opinions can be more easily voiced by those who are familiar with 'the system', and decisions are made by those with power: doctoral schools, chairs, and management. They decide whom to ask, what to ask from them, and how much weight is put on the answers.

As I discussed previously, it is not a question of whether implementing the evaluation like this was a good or a bad idea. It is also difficult—and somewhat pointless—to assess, whether the evaluation could have been carried out any better, given the resources allocated to it. What can be concluded, however, is that a seemingly 'straightforward' or 'self-evident' process, such as an evaluation of doctoral training, which is 'business-as-usual' for most of the social actors involved in it, is *anything but* to those who are affected by the outcomes—the individual doctoral researchers, especially if their residence permit is about to run out and they are forced to leave the country before they can defend their thesis. For this reason, the results of this study can help in ensuring that *all* relevant social actors and their historical bodies are taken into account when assessing and developing doctoral education at a university level but also on a faculty and departmental level.

Going back to the heterogeneity and the research literature I cited previously in this paper, we cannot consider international doctoral researchers as being located merely in a certain space or time (Pennycook, 2005; see also Aarnikoivu, 2020b).

Instead, they should be viewed as participants in a wider set of transcultural practices. This, according to Pennycook (2005), calls for a 'pedagogy of flow', as well as the need to create space for voices that have so far been unheard. He names this as being one of the greatest challenges of internationalising doctoral education. Considering that the internationalisation discourse is very much foregrounded and promoted in universities around the world, universities cannot afford to neglect international doctoral researchers—or international faculty in general—when carrying out different types of evaluation, development, or decision-making processes. If one talks the talk, one also has to walk the walk. This is especially important now after the tumultuous year of COVID-19, which has had a significant impact on international student flows.

Based on these earlier suggestions and to answer to this challenge, we should also consider and rethink the methodological options available to us researchers. While the strict word limits of journals might often set constraints for the researchers to explain their methodological choices thoroughly, the importance of choosing a particular methodology should not be ignored (see Jonker & Pennink, 2009; Oliver, 2016; Opoku et al., 2016). Methodological choices and justifications are connected to how or who we are as researchers. As C. Wright Mills writes in his ground-breaking work on *sociological imagination,*

> ...you must learn to use your life experience in your intellectual work: continually to examine and interpret it. In this sense craftsmanship in every intellectual product upon which you may work. To say that you can 'have experience' means, for one thing, that your past plays into and affects your present, and that it defines your capacity for future experience. (Mills, 1959, p. 196)

Following the ideas of Mills, as well as the empirical observations of this paper, it is possible to formulate two additional questions to the ones presented in the previous section:

- What enables or restricts higher education scholars exploring modes of inquiry that are not typical in their 'home' discipline or field?
- Why have international doctoral researchers been studied in the ways they have and what has been missed—if anything?

In his last major study, Bourdieu (2004) asked the same thing: What is usually swept under the carpet, never discussed, and more or less continuously misrecognised? As Scollon and Scollon (2004) state, during their research work the analyst is engaging in the very same discourses that they are studying. This is particularly important in qualitative research: the research participants have a unique past, present, and future but so does the researcher. Fully accounting for this relationship is a key hallmark of qualitative inquiry. But is it accounted for most of

the otherwise interesting literature focused on international doctoral researcher literature?

Luckily, some interesting experiments and collaborative efforts can be found in the literature on international doctoral researchers. Some of the most noteworthy ones include the work done by Elliot et al. (2016b) on the 'hidden curriculum' and Elliot et al. (2016a) on academic acculturation. Moreover, there have been several scholars who have focused on international doctoral researchers' 'communities of practice': As Cai et al. (2019) summed up, such communities can enhance international doctoral researchers' identity, scholarly growth, as well as their psychological well-being. Researchers who participate in such practices and projects, wanting to facilitate change in their respective communities, demonstrate the kind of *methodological imagination* (Fine, 2018) which, I argue, is needed to answer the questions I have formulated above.

Conclusion

In the preceding three-stage analysis I have shown how nexus analysis (Scollon & Scollon, 2004) provides a fruitful holistic, qualitative mode of inquiry for studying international doctoral researchers. I have done this by first introducing the three core concepts of nexus analysis. Second, I have demonstrated how to conduct such analysis by going through the three stages of nexus analysis—engaging, navigating, and changing the nexus of practice. Finally, I have discussed how a critical examination of a versatile data set is able to reveal something of interest, which is not typically discussed in relation to the studied nexus of practice, especially from a bottom-up perspective.

To claim that nexus analysis is the only mode of inquiry that is able to address complex topics that do not have simple answers would obviously be very narrow-minded. There are other equally appealing activist approaches for interdisciplinary research which utilise multiple methods and methodologies and aim at change, as discussed earlier. The purpose of this paper is not to raise nexus analysis on a special pedestal but rather introduce it to higher education scholars who may not have heard of it before, or if they have, might not have been courageous enough to explore it further.

Such an exploration would be important, however. As Wilkins (1999) states, applied language studies, as a field, is specifically 'concerned with increasing understanding of the role of language in human affairs and thereby with providing the knowledge necessary for those who are responsible for taking language-related decisions whether the need for these arises in the classroom, the workplace, the law court, or the laboratory' (p. 7; on higher education and language policies more specifically, see Saarinen, 2017, 2020). Although those who study international doctoral researchers or those who make decisions regarding them are not only addressing *language-related* challenges or making *language-related* decisions, language-related approaches and viewpoints cannot be excluded from

the range of expertise that is needed to address the challenges of the heterogenous group of international doctoral researchers.

Despite it being quite a challenging approach, especially for an early-stage researcher, nexus analysis allows a great deal of flexibility for the analyst. However, its main challenge is the change: It is often accidental and not always welcomed (Scollon & Scollon, 2004). Most of all, it is usually very slow. This is why attempting to seek fundamental change by writing one article—or even one dissertation—is not realistic. However, with small (yet determined and consistent) individual actions, by developing a coherent, long-term scholarly agenda over time, as well as by collaborating interdisciplinarily with other researchers focused on similar topics, a gradual but slow change is possible.

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Through student eyes: Assessment conceptions and quality assurance

Serafina Pastore

Abstract

Recent reforms of higher education systems in Europe, since the implementation of the Bologna Process, encourage teachers to incorporate a range of assessment practices that should be more responsive to students' learning needs. Over the years, an extensive body of literature has been produced regarding principles and practice guidelines for the assessment of students' learning outcomes. However, what are students' conceptions of assessment? The present article, given the strong drive to understand the role that conceptions have in educational practices, focuses on students' conceptions of assessment within the Italian higher education system. More specifically, this paper reports on a research study realised through the administration of the Students' Conceptions of Assessment Inventory (SCoA). The data were analysed using a Confirmatory Factor Analysis (CFA) design. This study represents a useful step in understanding conceptions that students have of assessment within the framework of quality assurance. Results of the study may set the groundwork for a critical debate on changes and improvements in the higher education field.

Keywords: assessment; higher education; quality assurance; student conceptions; student learning

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Introduction

Following the Bologna Process, from a policy-driven outcome-oriented perspective, the most recent reforms of the higher education systems worldwide embolden teachers to expand their educational paradigms by experimenting with assessment practices designed to measure students' learning outcomes (Banta & Blaich, 2011; Eubanks, 2019; Zlatkin-Troitschanskaia, Pant, & Coates, 2016). The global emphasis on accountability has put assessment at the core of many of the debates about quality assurance: assessment serves as a basis for effective development and continuous improvement of higher education systems (Maassen & Stensaker, 2019). Accordingly, assessment practices are required to be more responsive to students' learning needs (Carless et al., 2017).

In Italy, the intense drive for accountability, quality assurance, and outcome-based education has also led to new interests in evaluation and assessment. The last University Reform Law (n. 240/2010) introduced a new idea of the university; instructional design, student services organisation, teaching content, and strategies have been modified in order to foster students' learning outcomes. Assessment practices serve different purposes and involve various stakeholders. In this vein, assessment practices should/could be substantially different from what they were only a few decades ago.

In order to understand these changes, it is crucial to analyse what Italian teachers and students think of assessment and if they adapt (or not) their assessment practices to new policy requirements. Aligned to this main aim, the present article focuses on students' conceptions of assessment.

The article is organised into three main sections. The first part reviews relevant literature on students' conceptions. Moreover, it illustrates the Italian higher education system and introduces the rationale and main aims of the IDEA (Improving Feedback Developing Assessment for Higher Education) project. The second part focuses on a research study, realised within the IDEA project, which aimed to explore Italian students' conceptions of assessment. More specifically, this study examined the use of the SCoA (Student Conceptions of Assessment) Brown's model in two samples of students, and this article reports its first testing in the Italian higher education context. Differences and similarities between current results and the previous studies carried out with the SCoA are also presented. Several suggestions, research implications, and practical recommendations for further improvements in the higher education field are discussed in the third part.

Background

Assessment plays a crucial role in teaching and learning processes. However, the definition of assessment represents a difficult challenge: given the radical transformations of higher education systems around the world (Broucker, De Wit, & Verhoeven, 2018; Dorothea & Pruisken, 2015; Pricopie et al., 2015), assessment has become a complex concept characterised by several functions and purposes.

In a scenario framed by new educational policies and practices, remarkable efforts have been made to outline (and practise) a different kind of assessment in universities. Firstly, responding to learners' needs, assessment has been linked to the active participation and collaboration of students (Carless & Boud, 2018; Henderson, Ryan, & Phillips, 2019; Jungblut, Vukasovic, & Stensaker, 2015; Ryan & Henderson, 2018). Secondly, the recognition that assessment variously impacts on students' learning outcomes (Biggs & Tang, 2011) reinforced the proposal of sustainable assessment (Boud, 2006). Assessment, in this vein, fosters learning and supports students to be, in a life-long perspective, self-regulated learners (Andrade, 2010; Sambell, McDowell, & Montgomery, 2013). Lastly, alternative assessment methods (e.g., portfolio, projects, self and peer-assessment, simulation,

collaborative assessment) are regarded as more effective for students to develop new competencies. These formative assessment methods and strategies support students 'to appreciate the standards that are expected from them' (Yorke, 2003, p. 480) and address the role that students have on their self-regulation; the process whereby students 'reflect on the quality of their work, judge the degree to which it reflects explicitly stated goals of criteria, and revise their work accordingly' (Andrade, 2010, p. 91).

At the same time, the strong influence exerted by outcomes-based education (Adam, 2004) and by the implementation of the Bologna Process has led to assessment that is more responsive to validity and reliability requests, and functional in terms of institutional effectiveness. Testing and measurement procedures have been reconsidered in order to determine students' learning progression, measure student learning, and provide awareness raising information to different stakeholders (faculty members, students, policy-makers, families, etc.). As a result, teachers (and students) are called to incorporate a range of different assessment practices responsive to students' learning needs, as well as aligned with the quality assurance process (Biggs & Tang, 2011; Maki, 2017).

Over the years, extensive research literature has been produced regarding the principles and the practices for the assessment of students' learning outcomes. In the face of the lively debate and of the awareness of the implications of assessment, it becomes important to make clearer how teachers and students perceive the assessment process. The strong drive in the higher education field to analyse the role that conceptions have in assessment represents the basis for investigating the impact which assessment has on student learning. Educational research has demonstrated that conceptions represent a crucial and powerful access to the modalities (how) and purposes (why) of individuals: thus, conceptions work as a framework through which teachers and students see, analyse, and act within a specific learning context. The research literature on teachers' and students' conceptions lays out the foundation for the conceptual framework adopted for the present study. The subsequent section briefly reviews this literature.

Teachers' and students' conceptions in the higher education context

Pratt (1992) defines conceptions as 'specific meanings attached to phenomena which then mediate our response to situations involving those phenomena' (p. 204). As abstract representations, conceptions guide our understanding of the world. Moreover, conceptions affect how we perceive and interpret a situation and how we shape our actions.

In educational research, over the years, there has been an extensive reference to conceptions as lenses through which it is possible to analyse and understand the teaching-learning process. Several studies have tried to highlight what conceptions teachers and students have about:

- *Teaching.* The ways teachers think and understand teaching affect teaching practice (Gow & Kember, 1993; Kember, 1997; Pratt, 1992; Samuelowicz &

Bain, 1992; Trigwell & Prosser, 1997). In this perspective, teachers tend to adopt some approaches to teaching when these are consistent with beliefs about teaching. More recently, research has demonstrated that teachers' expertise influences the conceptions of and approaches to teaching (Englund, Olofsson, & Price, 2017; Sagy, Hod, & Kali, 2019);

- *Learning.* The research focus here is on the expectation of the meanings that teachers and students make of the learning process, as well as on the attempts to explain how learners view knowledge and skills development (Entwistle, 1997; Marton & Säljö, 1976). While previous studies have highlighted the differences in learning conceptions among learners with different learning experience (Säljö, 1979), explaining how students interpret learning goals and learning situations, current studies (Vezzani, Vettori, & Pinto, 2018) mainly indicate learning conceptions as a cluster of individuals' ideas and views about learning influenced by different aspects (e.g., gender, academic area, level of study, and educational contexts);
- *Curriculum*. Several aspects are encapsulated within the concept of curriculum: the knowledge and skills expected to be taught by teachers and learnt by students, as well as the value judgments on important knowledge (Cheung, 2000). The way the curriculum is perceived and understood, ranging from an instrumental perspective of content transmission to a holistic one of process and praxis (Cliff et al., 2020; Walker, 2012), influences how teaching and learning will be performed, especially during institutional reforms, renewal, and changes;
- *Personal epistemology* is related to the nature of knowledge, its origins, limits, and justifications. Orginally philosophers' province, personal epistemology becomes a research topic for psychologists interested in analysing individuals' conceptions of knowledge and their influence on learning (Greene, Azevedo, & Torney-Purta, 2008). Translated into the educational context, personal epistemology conceptions are fundamental. In fact, they exert influence on teachers' instructional strategies and decision-making (Kember & Gow, 1994). At the same time, personal epistemology conceptions impact students' academic performances and learning strategies (Schommer, 1993; Schraw, Bendixen, & Dunkle, 2002; Wood & Kardash, 2002; Yerrick, Pedersen, & Arnason, 1998), as well as their predispositions to knowledge and their engagement with learning;
- *Assessment.* While teachers' conceptions of assessment are linked to their conceptions of knowledge (Postareff et al., 2012; Samuelowicz & Bain, 1992), students' conceptions reflect students' levels of endorsement about the nature and purpose of assessment (Brown, 2004, 2008; Brown et al., 2009; Stamp, 1987; Struyven, Dochy, & Janssens, 2005). Several studies have remarked how the focus on assessment conceptions is relevant to understanding how educational policies play out in practice (Brown, 2008; Brown & Hirschfeld, 2007, 2008). Moreover, the investigations on assessment conceptions shed light on teachers' and students' practices in

higher education settings (e.g., the promotion of formative assessment or the uses and misuses related to the culture of testing).

Despite the emphasis on educational research about teachers' and students' conceptions, in Italy there are very few studies focused on how students conceive and experience assessment. Even though the Italian higher education context is dealing with deep and, in some cases, radical transformations related, first of all, to the introduction of the quality assurance process, teachers' and students' assessment conceptions (and practices) seem to be mostly conventional, formal, and summative (grading, marking, selection, and certification).

Given this framework, the present paper aims to analyse what conceptions students have of assessment. This study is part of the IDEA (Improving Feedback Developing Effective Assessment for Higher Education) project: a multiple-case research project designed to effectively embed the quality assurance process and the *assessment for learning* perspective (Pastore et al., 2019; Pastore & Pentassuglia, 2016). The next paragraph provides background information about the Italian higher education system and the rationale of the IDEA project.

The Italian higher education system

The assessment practices in the Italian higher education system have become more evident since 2004, as a consequence of social, policy, and economic innovations. The University Reform Law n. 240/2010 led to relevant changes in the evaluation of teaching-learning, scientific research, and administration. In a short time, renewed attention was paid to these three areas and to their main issues; therefore, evaluation and assessment have been recognised as pivotal elements for quality assurance in the higher education context.

The laws n. 240/2010 and n. 19/2012 regulate the quality assurance process in Italy. These laws aim to implement assessment more transparently and effectively, and in a way which is more useful for teachers and students, but also for policy-makers and other stakeholders (e.g., labour agencies, families, etc.). Drawing on the *assessment for learning* perspective and moving beyond a culture of compliance in accreditation, the university reform also led to a reconsideration of assessment aims so that students can develop skills and competencies for their future personal and professional life (Boud, 2006; Craddock & Mathias, 2009; Gijbels et al., 2014).

While the rationale of the new assessment framework was clearly explained in the laws' statements, several problems started to arise during the reform implementation, however. First of all, the Italian teachers demonstrated a strong opposition to new principles and practices of assessment. Secondly, assessment malpractices (e.g., students' cheating in filling in the end-course questionnaire) became evident. Thirdly, the new and alternative assessment practices, such as

those suggested by the perspective of *assessment for learning*, were largely unknown and unpracticed.

In order to introduce and disseminate the principles and the rationale of *assessment for learning* within the Italian higher education, a multiple-case study research project has been designed and implemented. Moreover, this project, sponsored by the National Agency for the Assessment of Higher Education and Research (ANVUR), aimed to integrate, in a more coherent and cohesive way, the quality assurance process and the assessment of student learning.

The IDEA project

The IDEA project (Improving Feedback Developing Effective Assessment in Higher Education) aimed to implement an assessment model that, on the one hand, enhances the role of feedback for the improvement of the teaching-learning process, and, on the other hand, allows the gathering of valid and useful evidence for the quality assurance. 552 students and 30 teachers of the case university (Bari, in the South of Italy) have been involved in a set of training activities aimed to show them how to perform formative assessment and how to use assessment data in order to support both the quality assurance and the teaching-learning processes.

The IDEA project aimed to:

- Firstly, analyse teacher and student's assessment conceptions (and practices) within the Italian higher education system (Phase 1);
- Then, identify the more frequent problems that teachers and students have with feedback and detect the main characteristics of good feedback practice (Phase 2) and;
- Finally, design a model of feedback practice that could be embedded both in the teaching-learning process and in the quality assurance system (Phase 3).

Even though educational research has clearly shown how conceptions influence the teaching-learning process, it has to be noted that teachers and students' practices influence their conceptions and reflect the existing culture within an academic environment. Aligned with this perspective, during the Phase 1 of the IDEA project, the analysis of students' conceptions of assessment represented a good chance to understand what students think of and how they experience assessment and what conceptions they have about the current policy and institutional innovations. More specifically, the case-study reported below focused on this main research question:

- What do students think about the nature, the purpose, and the effects of assessment?

The Italian students' conceptions of assessment: A research study

Generally analysed through the impact of assessment on learning outcomes, students' conceptions of assessment can be, following Brown (2008, 2011), adaptive or maladaptive. In the first case, assessment supports personal agency and student responsibility in learning. Therefore, assessment, perceived as a chance to review and improve learning, represents a legitimate process for students. In the second case, instead, assessment is rejected because it is perceived to have no validity or meaning for students. The responsibility of assessment is always external and students conceive of it as unfair or illegitimate. Brown (2008) reduced the different uses of assessment (e.g., selection, certification, monitoring, etc.) in four major conceptions of assessment. Three of these are categorised as purposes and one as anti-purpose:

- *Improvement*. Assessment serves to improve teaching and learning; supplying information and data, assessment allows students to judge, plan, and improve their own learning (e.g., 'Assessment is checking off my progress against achievement');
- *External attributions*. Assessment is functional in terms of being able to respond to accountability requirements; in this perspective, students conceive of assessment as a means to measure their future or the teaching quality (e.g., 'Assessment results predict my future performance');
- *Affect/social*. This dimension collects the aspects that characterise assessment as a positive experience in the learning context of the classroom. Moreover, here are included emotional and relational dimensions of assessment (e.g., 'Assessment is an engaging and enjoyable experience for me');
- *Irrelevant*. This dimension (the anti-purpose of assessment) reports the tendency of students to ignore or to negatively consider assessment. This aspect is evident especially when students focus on the validity of feedback on their learning (e.g., 'Assessment results are not very accurate').

These four main purposes (or dimensions) have different factors (and sub-factors) related to each other (Figure 1) that have been operationalised through a self-reported questionnaire (Brown, 2008; Brown et al., 2009): the Student Conceptions of Assessment inventory (SCoA). This questionnaire is made up of 33 statements about assessment where respondents express their agreement or disagreement on a 6-point Likert scale (Brown et al. 2009; Weekers, Brown, & Veldkamp, 2009).

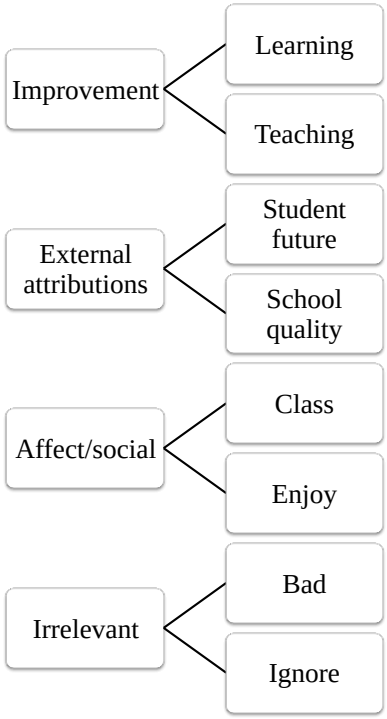

Figure 1. Student conceptions of assessment model (adapted from Brown, 2008).

For the present study, in view of the critical literature review on students' conceptions, the SCoA IV version has been used (Appendix). This inventory has been chosen because it offers a more articulated model of assessment conceptions and also because it has been used in comparative studies performed in different countries, like Hong Kong, China, Brazil, and New Zealand (Brown & Hirschfeld, 2008; Matos, Cirino, & Brown, 2009; McInerney, Brown, & Liem, 2009; Wise & Cotten, 2009). The inventory has been translated into Italian and piloted with 50 voluntary students in two Didactics modules (undergraduate degree in Education) and through a subsequent peer-review. This process ensured that the questionnaire was acceptable and understandable for the Italian students. The next section reports the research design and the main research results.

Participants and main results

Data were collected from a volunteer sample of students enrolled in graduate and post-graduate courses at the case-university. A non-probability sample design was used (a convenience sample, in the first case, and a snowball sample, in the second one). More specifically, the SCoA inventory was administered to two different samples of students: the first sample was made of 254 students involved in the IDEA research project (IDEA_sample); the second (UNIBA_sample), instead, was a casual sample (1,118 students). A total of 1,372 questionnaires were gathered. However, only 809 of them were fully filled out and were acceptable for the analysis. Even though the net response rate (59%) was not optimal, the sample was representative of the population of interest. Given that the SCoA structure was established on prior empirical and theoretical grounds, a Confirmatory Factor

Analysis (CFA) was performed. The objective of the analysis was to corroborate the theoretical structure of the SCoA in the Italian higher education context. For this reason, the CFA has been preferred to an Exploratory Factor Analysis (EFA) that is generally used to explore the possible underlying factor structure or constructs of a set of observed variables without a preconceived structure.

254 students involved in the IDEA research project completed the SCoA inventory. Only 216, after a data-cleaning process, were acceptable for the analysis. Students are equally distributed between male and female. The average age was 21.42 years (min=18, max=40, sd=4.22). All analyses were performed with AMOS version 20.0. The first step in the analysis was to test the theorised structure (i.e., the model) set out by Brown (2004, 2011) in a confirmatory factor analysis. A model, in a CFA, can be considered acceptable if the absolute fit-indices, like the Goodness-of-fit statistic (GFI), the Comparative fit index (CFI), and the Root mean square error of approximation (RMSEA) have respectively these values: GFI>0.8, CFI>0.8 and RMSEA<0.08 (Hooper, Coughlan, & Mullen, 2008). Analyses showed that data scarcely fitted to the model: GFI=0.739; CFI=0.747; RMSEA=0,083. A backward elimination (or backward deletion) was applied: starting from the original model, one by one, all items with very poor factor loadings (or with a poor modification index) were cut. Then, one by one, those eliminated items have been included in order to verify if they could be considered again in the original model structure (Hooper et al., 2008).

At the end of the data-cleaning process, 10 items were cut. Specifically, for the *Improvement* conception, only one item was cut: 'I make use of the feedback I get to improve my learning'. Instead, for the *External attributions,* the cut item was 'Assessment provides information on how well schools are doing'. For the *Affect/social* conception, these two items were not included: 'Assessment motivates me and my classmates to help each other' and 'I find myself really enjoying learning when I am assessed'. However, the most relevant reduction occurred for the *Irrelevant* conception with a cut of 6 items: 'I ignore assessment information'; 'I ignore or throw away my assessment results'; 'Assessment has little impact on my learning'; 'Assessment interferes with my learning'; and 'Teachers are over-assessing'.

The new selected model presented 23 items (Table 1) and contained the four correlated major factors, which constitute the conceptions of *Improvement*, *External attributions*, *Affect/social*, *Irrelevant*. This new factorial structure demonstrated a fairly good fit to data (GFI=0.824, CFI=0.858, RMSEA=0,079), leading to its acceptance.

N	Conception	Factor	SCoA Wording	Factor loading
1	Improvement	Learning	I pay attention to my assessment results in order to focus on what I could do better next time	0.448
5	Improvement	Teacher	Assessment helps teachers track my progress	0.683
8	Improvement	Teacher	Assessment is a way to determine how much I have learned from teaching	0.796
9	Improvement	Teacher	Assessment is checking off my progress against achievement objectives and standards	0.753
15	Improvement	Learning	I use assessment to take responsibility for my next learning steps	0.729
19	Improvement	Learning	I use assessment to identify what I need to study next	0.612
23	Improvement	Teacher	My teachers use assessment to help me improve	0.741
27	Improvement	Teacher	Teachers use my assessment results to see what they need to teach me next	0.591
30	Improvement	Teacher	Assessment shows whether I can analyse and think critically about a topic	0.684
4	External	Student future	Assessment results show how intelligent I am	0.529
16	External	Student future	Assessment results predict my future performance	0.575
24	External	School	Assessment measures the worth or quality of schools	0.633
33	External	Student future	Assessment tells my parents how much I've learnt	0.739
2	Affect	Class	Assessment encourages my class to work together and help each other	0.740
6	Affect	Enjoy	Assessment is an engaging and enjoyable experience for me	0.617
12	Affect	Class	Assessment motivates me and my classmates to help each other	0.733
17	Affect	Class	Our class becomes more supportive when we are assessed	0.504
21	Affect	Class	When we do assessment, there is a good atmosphere in our class	0.584
25	Affect	Class	Assessment makes our class cooperate more with each other	0.743
28	Affect	Class	When we are assessed, our class becomes more motivated to learn	0.526
3	Irrelevant	Bad	Assessment is unfair to students	0.999
22	Irrelevant	Bad	Assessment results are not very accurate	0.505

Table 1. Factorial structure SCoA_IDEA sample.

The *Improvement* conception is made up of nine statements that focus on using assessment to support both teachers and students. Five statements form the *External attribution* conception; it has to be noted that only one statement is focused on the quality assurance process while the other ones are related to the Student future factor. Seven statements form the *Affect/social* conception of assessment; only one refers to the *Enjoy* factor demonstrating how assessment, in this new structure, is more frequently perceived in terms of social experience. The last conception,

Irrelevant, has only two statements linked to students' negative opinions about the value and the accuracy of assessment.

The average of all items contributing to each factor (as displayed in Table 1) has been calculated to have the scale score. Factor inter-correlations (Table 2) showed a logically consistent pattern between *Irrelevant* and the three other factors (all negative): the more assessment served one of these purposes, the less it was recognized as Irrelevant. Moreover, the strongest relationship (r= 0.76) was between *External attribution* and *Improvement*. Thus, students involved in the IDEA project seemed to have a twofold conception of assessment: assessment is a component of the quality assurance process; yet, it supports students to push forward their learning.

No significant gender differences were found using the t-test. Instead, a significant and negative correlation emerged between age and *Improvement* scale (*r*= 0.151).

	Affect/social	Irrelevance	External	Improvement
Affect/social				
Irrelevant	-0.17			
External	0.56	-0.31		
Improvement	0.47	-0.23	0.76	

Table 2. Correlations between the main four assessment conceptions

The same procedure was applied to the second sample. 1,118 questionnaires were gathered through a snowball administration. First a data-cleaning process was required in order to identify questionnaires not acceptable for analysis. In this way, the sample was reduced to 593 students: 389 of them female and 204 male. The average age was 22.93 (min=18, max=47, sd=4.32).

Also in this case, the confirmatory factor analysis showed a modest fit of data to the Brown's model (GFI=0.794, CFI=0.794, RMSEA=0,076). A backward elimination (or backward deletion) was applied: starting from the original model, one by one, all items with very poor factor loadings (or with a poor modification index) were cut. Then, one by one, those eliminated items were included in order to verify if they could be considered again in the original model structure.

In this way, 12 items were cut. Specifically, for the *Improvement* conception, these items were: 'I look at what I got wrong or did poorly on to guide what I should learn next' and 'Teachers use my assessment results to see what they need to teach me next'. In the *External attributions* dimension these items were not considered: 'Assessment results show how intelligent I am'; 'Assessment results predict my future performance'; 'Assessment is important for my future career or job'; 'Assessment provides information on how well schools are doing'; 'Assessment measures the worth or quality of schools'. Cutting these two items corresponds to the exclusion of the accountability factor from the original model. While the item 'When we do assessment, there is a good atmosphere in our class'

was the only one eliminated from the *Affect/social* dimension, the items "Assessment is unfair to students"; "Assessment interferes with my learning"; "Teachers are over-assessing"; Assessment results are not very accurate" were cut from the *Irrelevant* dimension. Also, in this case, items with a low loading demonstrated how the model was not confirmed. The new model presented 21 items (Table 3). This factorial structure contained the four correlated major factors of the SCoA model and demonstrated a good fit to data (GFI=0.881, CFI=0.909, RMSEA=0,069).

It is interesting to note that, in this case, the *Improvement* conception is made up on nine statements that focus on using assessment to support teaching and learning. The *External attribution* conception has only one statement and this is related to Student future: thus, in this new model, assessment is not linked to quality assurance or accountability processes. The *Affect/social* conception of assessment, also in this case, is related more to the *Class* factor demonstrating how assessment is perceived as a social process. Four statements make up the *Irrelevant* conception of assessment: three of them are on the Ignore factor.

N	Conception	Factor	SCoA Wording	Factor Loading
1	Improvement	Learning	I pay attention to my assessment results in order to focus on what I could do better next time	0.670
5	Improvement	Teacher	Assessment helps teachers track my progress	0.685
8	Improvement	Teacher	Assessment is a way to determine how much I have learned from teaching	0.890
9	Improvement	Teacher	Assessment is checking off my progress against achievement objectives and standards	0.769
10	Improvement	Learning	I make use of the feedback I get to improve my learning	0.517
15	Improvement	Learning	I use assessment to take responsibility for my next learning steps	0.758
19	Improvement	Learning	I use assessment to identify what I need to study next	0.666
23	Improvement	Teacher	My teachers use assessment to help me improve	0.667
30	Improvement	Teacher	Assessment shows whether I can analyse and think critically about a topic	0.715
33	External	Student future	Assessment tells my parents how much I've learnt	0.781
2	Affect	Class	Assessment encourages my class to work together and help each other	0.826
6	Affect	Enjoy	Assessment is an engaging and enjoyable experience for me	0.626
12	Affect	Class	Assessment motivates me and my classmates to help each other	0.835
17	Affect	Class	Our class becomes more supportive when we are assessed	0.596
25	Affect	Class	Assessment makes our class cooperate more with each other	0.813
28	Affect	Class	When we are assessed, our class becomes more motivated to learn	0.617
29	Irrelevant	Ignore	I ignore or throw away my assessment results	0.658
31	Affect	Enjoy	I find myself really enjoying learning when I am assessed	0.591
7	Irrelevant	Ignore	I ignore assessment information	0.564
26	Irrelevant	Bad	Assessment is value-less	0.667
32	Irrelevant	Ignore	Assessment has little impact on my learning	0.571

Table 3. Factorial structure SCoA_UNIBA sample

As well as in the previous analysis, scale scores were calculated by averaging all items contributing to each factor displayed in Table 3. A logically consistent pattern between *Irrelevant* and the three other factors (all negative) emerged from the factor inter-correlations (Table 4): the more assessment served these purposes, the less it was irrelevant. Again, the strongest relationship (r=0.72) was between *External attribution* and *Improvement* suggesting that students involved in this study do not see conflict between these two assessment conceptions.

	Affect/social	Irrelevance	External	Improvement
Affect/social				
Irrelevance	-0.33			
External	0.64	-0.43		
Improvemet	0.60	-0.31	0.72	

Table 4. Correlations between the main four assessment conceptions

No significant gender differences were found. A significant and negative correlation was highlighted between participants' age and the *Affect/social* scale (r= 0.121).

Discussion

Participants involved in this study demonstrate how their assessment conceptions are mainly focused on the dimensions of *Improvement*, *Affect/social*, and *External attributions*. This is consistent with previous studies (Brown & Hirschfled, 2008; Matos et al., 2009; Wise & Cotten, 2009) that have shown how students tend to recognise assessment as an important element for their learning and their growth. However, the data provide evidence that students tend to associate assessment with a process of controlling/monitoring their learning.

In the new factorial structure that is partially variant with respect to the SCoA model, the items with a more relevant loading are in the *Affect/social* dimension and all of them gravitate around the sub-factor of the classroom. This aspect highlights how important it is for these students to support and help each other, especially when they are involved in (formal) assessment practices (e.g., exams). The conception of assessment as a control activity that teachers exert for summative purposes, rather than for the improvement of students' learning, is relevant: in this case, students' dissatisfaction with assessment and feedback practices, despite recent research perspectives (Evans, 2013; Henderson et al., 2019), remains a critical problem in the Italian higher education system.

The reduction of the *Irrelevant* dimension could be considered, in the case of participants in the IDEA project, as a positive result. However, in the new factorial structure, the item 'Assessment is unfair to students' is the item with the stronger loading, followed by the items 'Assessment tells my parents how much I've learnt'

(*External attributions*) and 'Assessment is checking off my progress against achievement objectives and standards' (*Improvement*). Data confirm a negative representation of assessment: students who consider (and experience) assessment as a process of control seldom perceive assessment as unequal and unfair.
A little difference emerges only for students involved in the IDEA project: these students consider assessment as a strategy for the improvement of their learning. However, it could be a hazard to affirm that this result is an effect (direct or indirect) of the IDEA project, because the time is not sufficiently long to allow an impact evaluation of a change in students' conceptions.

The study participants demonstrate that they conceive assessment (its rationale, aims, and strategies) mainly in terms of summative assessment. Students have the intuitive idea that assessment can support them in their academic performances and learning. However, the conception of assessment as a control and selection instrument is stronger. While students, as required by the quality assurance process, are expected, and encouraged, to take an active role in creating and assessing their learning, participants in this study are not engaged and continue, passively, to perceive assessment as not embedded in their practice. Moreover, assessment is not perceived as an inclusive and equitable practice, and it is likely that this conception is related to teachers' assessment conceptions (and practices): assessment interferes with student learning only in terms of external and mandatory practices (e.g., final exams or quality assurance).

This is further evidence of the paucity and instrumental nature of assessment in Italy. The perspective of an assessment task as a chance for improving students' learning and supporting their personal growth is not recognised and practised by students (Zeng et al., 2018) involved in this research study (especially for the IDEA sample). If on the one hand, educational policy in Italy calls for innovations in the assessment domain, on the other hand, the examination-driven system seems to be predominant: thus, students have difficulties tackling assessment issues (e.g., the multiple purposes of assessment; the adequacy of assessment practice; its impact on supporting learning; and the adaptation of the institutional quality assurance framework to local contexts).

Limitations

Three main limitations can be identified in this study: Firstly, the sampling is not systematically representative and equivalent across the Italian higher education context. The oversampling from one institution limits the generalisability of the results. Hence, further, replication studies, which ensure greater variability, are required. Secondly, despite the web administration advantages (e.g., easiness in completing the questionnaire, gathering data, large availability of respondents), it is likely that the reduced control of the process and the stronger risk of respondents' automatism have impacted the quality of information gathered. Thirdly, a further study could be useful in order to verify if students involved in the IDEA project

have really understood and acquired principles and practices of *assessment for learning*. A change in assessment conceptions and practices can be challenging: for this reason, Italian students need to be helped in these radical changes and supported with assessment literacy development paths (Carless & Boud, 2018).

Conclusions

Despite its intrinsic limitations, this study sheds an important light on students' conceptions of assessment: the research paths which aimed to address students' conceptions, beliefs, and values around assessment are an essential first step in order to gain valuable insights about university systems. Moreover, the exploration of students' conceptions allows a better understanding of incongruences and criticalities of the higher education systems, like the Italian one, where deep and radical transformations have been implemented.

While previous studies in the Italian context have tried to identify and describe different conceptions of assessment comparing teachers' and students' perspectives (Pastore et al., 2019; Pastore & Pentassuglia, 2016), this study, using the SCoA inventory, has provided, with the four main assessment dimensions, a convenient reference for a critical analysis of students' reactions to institutional changes. The emphasis placed on quality assurance and the pressure on higher education institutions to have effective policies and processes led to an increased relevance of assessment in learning and teaching. However, core practices in student assessment often remain problematic.

The results of this study clearly show the persistence of the culture of testing. Assessment is a mandatory aspect in the learning process and it is always perceived in terms of external activity. Therefore, the theories and practices related to the formative assessment (e.g., an active involvement in the feedback practice) are still unknown for the Italian students. A consistent gap here emerges between theory and practice, such as between the rationale of the legislative innovation and what actors think about it and how they experience it. Ultimately, this study explores a research field that in Italy is in its infancy. Although there is a growing interest towards assessment and quality assurance, more research is needed to understand the impacts of the latest institutional innovations in this higher education system.

Author biography

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Appendix 1. **The Student Conceptions of Assessment (SCoA) inventory.**

Please, help us with some information about yourself.

Sex: Female Male

Age: _____

Undergraduate student Postgraduate student

IDEA project participant YES NO

Questionnaire instructions

Please tell us how much you agree or disagree with each statement based on YOUR OWN opinion. Fill in the box ( ) that comes closest to describing your opinion. Note that the first column is STRONGLY DISAGREE and the last column is STRONGLY AGREE, and that the first two columns indicate disagreement, while the last four columns indicate agreement.

Thank you for participating in this survey.

N	**Conceptions of Assessment**	Strongly Disagree	Mostly Disagree	Slightly Agree	Moderately Agree	Mostly Agree	Strongly Agree
1	I pay attention to my assessment results in order to focus on what I could do better next time	❒	❒	❒	❒	❒	❒
2	Assessment encourages my class to work together and help each other	❒	❒	❒	❒	❒	❒
3	Assessment is unfair to students	❒	❒	❒	❒	❒	❒
4	Assessment results show how intelligent I am	❒	❒	❒	❒	❒	❒
5	Assessment helps teachers track my progress	❒	❒	❒	❒	❒	❒
6	Assessment is an engaging and enjoyable experience for me	❒	❒	❒	❒	❒	❒
7	I ignore assessment information	❒	❒	❒	❒	❒	❒
8	Assessment is a way to determine how much I have learned from teaching	❒	❒	❒	❒	❒	❒
9	Assessment is checking off my	❒	❒	❒	❒	❒	❒

	progress against achievement objectives and standards						
10	I make use of the feedback I get to improve my learning	❒	❒	❒	❒	❒	❒
11	Assessment provides information on how well schools are doing	❒	❒	❒	❒	❒	❒
12	Assessment motivates me and my classmates to help each other	❒	❒	❒	❒	❒	❒
13	Assessment interferes with my learning	❒	❒	❒	❒	❒	❒
14	I look at what I got wrong or did poorly on to guide what I should learn next	❒	❒	❒	❒	❒	❒
15	I use assessment to take responsibility for my next learning steps	❒	❒	❒	❒	❒	❒
16	Assessment results predict my future performance	❒	❒	❒	❒	❒	❒
17	Our class becomes more supportive when we are assessed	❒	❒	❒	❒	❒	❒
18	Teachers are over-assessing	❒	❒	❒	❒	❒	❒
19	I use assessment to identify what I need to study next	❒	❒	❒	❒	❒	❒
20	Assessment is important for my future career or job	❒	❒	❒	❒	❒	❒
21	When we do assessment, there is a good atmosphere in our class	❒	❒	❒	❒	❒	❒
22	Assessment results are not very accurate	❒	❒	❒	❒	❒	❒
23	My teachers use assessment to help me improve	❒	❒	❒	❒	❒	❒
24	Assessment measures the	❒	❒	❒	❒	❒	❒

	worth or quality of schools						
25	Assessment makes our class cooperate more with each other	❒	❒	❒	❒	❒	❒
26	Assessment is value-less	❒	❒	❒	❒	❒	❒
27	Teachers use my assessment results to see what they need to teach me next	❒	❒	❒	❒	❒	❒
28	When we are assessed, our class becomes more motivated to learn	❒	❒	❒	❒	❒	❒
29	I ignore or throw away my assessment results	❒	❒	❒	❒	❒	❒
30	Assessment shows whether I can analyse and think critically about a topic	❒	❒	❒	❒	❒	❒
31	I find myself really enjoying learning when I am assessed	❒	❒	❒	❒	❒	❒
32	Assessment has little impact on my learning	❒	❒	❒	❒	❒	❒
33	Assessment tells my parents how much I've learnt	❒	❒	❒	❒	❒	❒

When you think of the word ASSESSMENT, which kinds or types of assessment activities come to your mind? (*Fill in all that apply)*

- ☐ An examination that takes one to three hours
- ☐ I score or evaluate my own performance
- ☐ My class mates score or evaluate my performance
- ☐ The teacher asks me questions out loud in class
- ☐ The teacher grades or marks or scores the written work I hand in
- ☐ The teacher grades me on a written test that he or she made up
- ☐ The teacher grades me on a written test that was written by someone other than the teacher
- ☐ The teacher observes me in class and judges my learning
- ¨ The teacher scores a portfolio of work I have done over the course of a term or school year
- ☐ The teacher scores me on an in-class written essay
- ☐ The teacher scores my performance after meeting or conferencing with me about my work
- ☐ The teacher uses a checklist to judge my in-class performance
- ☐ Something else:

  _____
  _____

Fragmented boundary zones between theory and practice in preschool teacher education in Sweden

Jan Gustafsson Nyckel, Rolf Lander and Per-Olof Thång

Abstract

Research dealing with preschool teacher education has been, for a long time, critical of a binary divide between theory and practice. Based on that issue, this study investigates a preschool teacher education programme in Sweden. It focusses on reflection upon theory and practice as an affordance offered to students in studies and work. The study used a questionnaire with two different groups: campus students following the regular programme and students who were nurses already working at preschools. Analysis shows a fragmented education where the groups faced different problems, but also that neither of them could connect reflections on theory and practice at the workplace to their own deep learning approaches in either studies or working matters. How the students experienced affordances depended on their educational skills and knowledge, and the programme relied mostly on individual reflection as the solution to the binary divide. This reliance seemed to work better for campus students, who were challenged by the new environmental affordances. The students in the field-based programme were very close to the preschools' pedagogical micro-practice, which limited the possibility for critical reflection on theory and practice and its contextual conditions, especially for students who were nurses. Workplace routines seem to structure the students' learning instead.

Keywords: affordance; learning approach; preschool teacher education; study approach; theory and practice

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Introduction

In all kinds of professional education there is often said to be a binary divide between theory and practice, and most certainly this is so within teacher education (Sjølie, 2014; Zeichner, 2010), which has been criticised for more than a hundred years, from Dewey (1904) to, for example, Kim and Kim (2017). This article investigates ways to handle the disconnect between campus and field-based education in preschool teacher education programmes and evaluates such a Swedish approach.

Zeichner (2007) points out that the relationship between campus and field-based teacher education has a strong impact on the students' opportunities for learning. Traditionally this has been handled by assuming that theory is applied to the practice of the field-based education (Zeichner, 2010). However, according to Zeichner, this model creates problems for students' understanding of the relation between theory and practice. The field-based education therefore ought to constitute a more productive environment for professional learning. According to Klien et al. (2013, p. 28), 'a hybrid or a third space' is needed to overcome the cultural cleavage, a space where 'roles and responsibilities for faculty teachers, and community members are redefined while the knowledge base for teaching is restructured'. Development work with hybrid models is carried out all over the world (Zeichner, 2010).

This article focuses on a hybrid programme in Swedish preschool teacher education and aims to see if it managed to address the cleavage or if it worked any differently from a regular campus programme. Based on a governmental commission (SOU 1999:63, p. 76), it became mandatory from 2001 for all teacher education programmes to develop such hybrid programmes. In 2020, thirteen Swedish universities organised parts of their preschool teacher education as hybrid models.

We investigate two different groups of students at one of Sweden's largest preschool teacher education programmes. One group was studying within a campus model, with the field-based education as a vital part. The other group studied within a hybrid model, where the students worked and completed study assignments four days a week at their place of work and studied one day on campus. The aim is to investigate how students participating in each model were invited to see and reflect upon affordances in the practice, seen through theoretical lenses, and what effects this had on their professional development. The same questionnaire was given to the two groups after they had been studying for three years. After a description of the preschool teacher education programme in Sweden, we provide a brief research review on the relation between theory and practice in teacher education, which is followed by a comparison of the hybrid programme investigated to others of a similar kind, a presentation of our theoretical assumptions, the student groups that were investigated, and our empirical analysis.

The article concludes with a discussion in which we point out that the two educational environments, the campus and field-based education (workplace) afford two different ways of reflecting on theory and practice. We also highlight that neither of the student groups could connect reflections on theory and practice at the workplace to students' own deep learning approaches in either studies or working matters. The study followed the Swedish Research Council's ethical principles (2015) on informed consent and anonymity.

Preschool teacher education in Sweden

The Swedish preschool teacher education programme started during the mid-1960s as a two-year vocational school which was not part of any university. In 1977, it was integrated into the higher education system, and the programme took on a traditional academic structure with no obvious ties to preschool practice. However, the goals of both academic and vocational educational skills remained.

An evaluation judged that the practical pedagogical training did not achieve an acceptable level of competence (Swedish Council for Higher Education, 1996). This prompted a critical discussion about professionalism in which the solution implemented was an even stronger academic structure and more theoretical content, but supported by teaching of didactics (Englund, 1996).[10]

Previous research on theory and practice in teacher education

The transfer of knowledge between campus- and field-based teacher education is seen by many as too weak (Allen & Wright, 2014; Karlsson Lohmander, 2015; Korthagen, 2010; Zeichner, 2010). Korthagen (2010) also pointed out that the propositional theory learned on campus is not felt to be helpful by students. As new teachers, they are involved in a socialisation process at schools and are thereby introduced to institutionalised patterns of behaviour not easy to change for individuals. Han, Blank, and Berson (2017), Kim and Kim (2017), and others, have confirmed this.

Bell (2004) described a more than 20-year-old field-based preschool teacher education programme in New Zealand, which consists of three years of full-time studies and is conducted at 13 rather small teaching centres with local lecturers. The students had long-term experience from earlier work at preschools. One day a week, the students had theoretical, teacher-led instruction and one day individual, theoretical studies. The other three days of the week, the students worked at the preschools where they have their employment. Three weeks each year, they also practiced at a preschool other than their own. This arrangement made it possible for students to make use of theories in authentic preschool practice and allowed formal theory to be contextualised.

Beavers, Orange, and Kirkwood (2017) reported a trial with ten preschool teachers-to-be who, in seven weeks of practicum, took part in intense reflections upon practical situations, and showed considerable progress in challenging their own preconceived notions and typical practices. The trial included training in four different roles (lead teacher, assistant teacher, administrator, and assistant administrator), and a constant cycle of supervised planning, implementing, assessing, and reflecting daily, weekly, and over the full summer programme. Daily

[10] Preschool teacher education in Sweden is a 3.5-year programme at the bachelor level. During the programme, students complete a total of 20 weeks of field-based education (practice) and you can study to be a preschool teacher at 13 universities in Sweden.

semi-structured group reflections lasted for 45-60 minutes and were supported by students observing each other. Weekly and final reflections were in the form of individual diaries. However, a quantitative test of critical thinking skills before and after showed no change. Beavers et al. suspected that seven weeks of training was not enough for that.

According to Eriksson (2009), it is necessary to define the character of student teachers' work experiences, and this demands a strong partnership between their campus-based and field-based education, including personal relationships between students and their educators. Students are taken care of by mentors[11] at their workplaces, but Franke and Dahlgren (1996) showed that mentors are reluctant to develop a strong relationship with student teachers. Karlsson Lohmander (2015) also suggested that another organisation of knowledge production within the programme for preschool teacher education is necessary. According to Lenz Taguchi (2010), the preschool teacher education programme must be organised through a mix of learning environments and spaces, which opens for a variety of knowledge production and student experience.

Three hybrid models: the reflexive practice, workplace learning, and boundary crossing

Based on the problems described above, there has been a movement towards changing teacher education and rethinking the relationship between theory and practice. Three theoretical models are common: reflexive practice, workplace learning, and boundary crossing.

Reflexive practice was attempted with a so-called realistic approach, building on gestalt formation theory and reflection - on – action Schön (1983) launched a new epistemology centred on the concept of reflection, alluding to Dewey's (1988) thoughts regarding reflective practice. For Dewey, practical thinking is to take part in collective use of socio-cultural resources (language and artefacts) in order to recognise and frame problems and solutions. It is a 'perceptual awareness', says Korthagen (2010, p. 672), pointing to the Aristotelian concept of phronesis, a form of practical wisdom. We think that perceptual awareness is about affordance, a concept explained later in the text.

Still, reflective thinking on action is a good thing when socio-cultural resources are systematically and critically investigated, once again in light of the problems noted (Dewey, 1988). However, to reach the goal of reflective thinking, deep approaches to learning, which invite a search for meaning in tasks, are needed, especially when 'critical reflection' is defined as including a questioning of the validity of one's earlier thinking. A high level of this kind of reflection is relatively rare (Lundgren & Poell, 2016). Beach (2000) stated that this kind of reflection has to overcome the basic problem that a reflexive mood is usually lacking, both in the teaching practices of schools and in university education. The other two approaches taken up here—workplace learning and boundary crossing—both also seem to be

[11] The mentors are experienced preschool teachers at the students' workplace.

firmly rooted in a trustful attitude to reflection-on-action. The difference lies in the organisation of tasks and learning.

A workplace learning approach strongly advises learning connected to everyday situations. Bell (2004) pointed out that professional competencies and learning cannot be acquired in formal education, only through authentic learning at work. However, learning through the workplace's everyday situations is a highly complex process, and there are no simple pedagogical solutions for learning to manage such a situation. Billett (2011) as well as Costley and Armsby (2007) described academia and workplaces as two different learning environments. Both the workplace and the university have their own aims and norms that structure content and activities and thereby create local orders. Billett (2011) argued that, as long as an individual is a student in a formal educational setting, environment will dominate over the workplace as a learning environment. This is also in line with Garraway (2010). Garraway suggested that exam models make it difficult for practice to serve as the basis for theoretical knowledge development, since there are fundamental 'differences between academic and work knowledge in terms of the context of learning and the structure of knowledge respectively, and hence the problem of transfer from the academic to the work world' (Garraway, 2010, p. 1).

Boundary crossing tries to develop the relationship between theory and practice by creating a boundary zone while students move between different educational settings (Akkerman & Bakker, 2011). It is hoped that the zone provides opportunities for dialogue, meaning making, and knowledge production by integrating different activity systems. Learning in a boundary zone is attentive to both vertical and horizontal forms of learning. Vertical learning dominates theoretical and academic knowledge on campus. Horizontal forms of learning use every-day, practical knowledge.

Gutiérrez (2008) argued that horizontal learning that involves the student's reflection upon, and writing about his or her historical circumstances and ambitions of life will make them truly motivated. They should also participate in a range of practical activities outside school. Thereby multiple and sometimes conflicting activity systems will shape certain 'third spaces' within the programme, in which 'expansive learning' (Engeström & Sannino, 2010) can develop through boundary crossing and networking. The thoughts about 'third spaces' have much in common with what Lenz Taguchi (2010) previously described as a mix of learning environments and spaces.

In summary, the models above show three different ways of addressing the binary divide between theory and practice in teacher education. The nursing model reported on in this article rests on an idea about authentic workplace learning that should afford integration of theory and practice. The model cannot be compared to the boundary zones or the workplace learning approach that Beavers et al. (2017) report on, or Korthagen's (2010) example of reflexive practice. Rather, it is more like Bell's (2004) example.

In the programme involving nurses, the very authenticity of the workplace is meant to stimulate students to explore experiences in relation to theory together

with mentors. However, there are no special arrangements for this to happen, like those existing in the hybrid models discussed above. The mentors were left alone with this task, and with no special training for it. As we shall see, this was not a good precondition for such reflection to be common. The other investigated model, a traditional preschool teacher education programme, is based on a transfer model.

The obvious trust in reflection-on-action can also be seen as complementing a trust in reflection-in-action, the second concept in Schön's typology (Schön, 1983). However, Erlandsson (2007) found the latter concept unrealistic for crowded schools and also theoretically building on a counterproductive cartesian division of bodily and mental abilities.

Theoretical framework and design

Programme theory and mechanisms

We refer to programme theory as one frame for our investigation. Programme theory is connected to evaluation, but also to a wider interest in social mechanisms in social sciences. Like Astbury and Leeuw (2010, p. 364), we think of programmes as 'embodiments of theory'. They are upheld by programme executors, but not seldom understood in a fragmented way that makes them into what Astbury and Leeuw call 'black boxes' that hide the real causal functioning of the programme. Programme theory is a way to unfold such boxes and analyse actual mechanisms.

Mechanism as a concept focuses on causal relations that connect intended activities to outcomes, that is, making the programme fail or succeed. Our study especially highlights problems with affordance and reflection.

Placing this model within a programme-theoretical framework aims at forming a causal chain of 'CMO-configurations' (Pawson & Tilley, 1997). The acronym CMO stands for contexts—mechanisms—outcomes as a middle-range theory. In our investigation, contexts are the programmes' campus and workplace activities, and the primary mechanisms are experienced affordances and then learning approaches that students react with when confronting potential affordances from these activities. From a programme theory perspective, they should exist as intended and planned affordances, but are dependent on students' active curiosity and participation (Sadler & Given, 2007). Outcomes are measured in terms of intellectual stimulation and learning resulting from their studies and contribute to a professional self-concept for their job.

Affordance

For some time now affordance, as a theoretical concept, has been used within several fields to study how graduate students use the affordances of libraries (Sadler & Given, 2007), teacher education (Berglund et al., 2019), and more generally for learning at workplaces (Billett, 2001), for example.

Affordances are about perceptual learning from the environment, and are always linked to specific contexts (Gibson, 2003a[12]). Students identify and use affordances for meaningful action (Withagen, Araújo & de Poel, 2017). However, in education and practical training they need previously acquired skills and knowledge to be able to take full advantage of such actions. Then affordances change from a 'landscape', in which affordances are merely available, regardless of how they are perceived, into a 'field' that is 'calling for a certain way of action' (Withagen et al., p. 12, but the concepts of 'landscape' and 'field' are from Rietveld and Kiverstein, 2014).

We now turn to theoretical concepts that are directly measured in our questionnaire. Measures are nested pairs of general and specific factors, which will soon be explained. Factors can be seen in Figure 1, where the structural model is presented together with the standardised regression coefficients found. The hypothesised model contains two kinds of reflection and two kinds of outcome, mediated by two kinds of learning approaches. However, we had no particular hypotheses about specific relations between measures. All items belonging to the measurement models are included and presented in Tables 1–3 together with their standardised regression weights.

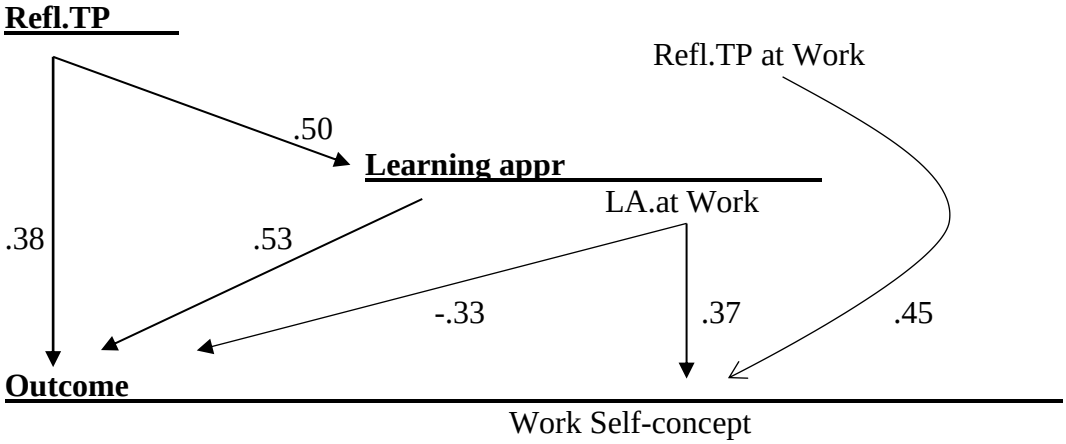

Figure 1. Structural equation modelling of the relation between factors in preschool teacher education in 2009–2011. Standardized coefficients (StdYX) for both groups. Fit indices: Chi^2 = 118,84; df = 105 (sig 0,17); RMSEA = 0.026; CFI = 0.984; SRMR = 0,053. General factors above lines in bold, specific factors under lines (see Tables 1–3).

Invitation to reflection

Among the needed skills for taking advantage of affordances are repertoires of reflection, which have a prominent place in teacher education, as discussed above. However, using theory for reflection means seeing affordances from another perspective than what the human mind ordinarily does (Withagen et al., 2017, p.12). Reflection together with campus teachers, mentors, and staff at workplaces, where practicum is taking place, is therefore a demanding task.

[12] This reference is to Eleanor Gibson, involved in establishing ecological psychology on the fundamentals of the theory about affordance made by her husband, James Gibson.

The questionnaire items investigated whether students had had invitations to take part in such processes (Table 1). In the measure of reflection on theory and practice (TP), the general factor concerns campus courses (Refl.TP), and the specific factor is about the workplace or practicum (Refl.TP at Work). The constructs make references to campus teachers, to the school staff and the supervisor, and to tutoring, and are thereby alluding to boundary crossing together with these people. The questionnaire asks whether the teacher education teachers, tutors, and school staff make students aware of theoretical implications that are possible to see among affordances.

Reflection on theory-practice	ReflTP	ReflTP at W	Res
2g. With the content of the courses as a base, we have been able to practice preschool teachers' working methods.	.726		.473
2h. Course content was intended to highlight practical problems at work.	.592		.653
2j. The teachers seem to have a clear picture of the theory-practice relation in education	.558		.689
4d. My supervisor would like to include theoretical arguments when we discuss practical tasks.	.209	.642	.544
4i. The staff here are interested in discussing the link between practice and theory.	.233	.783	.333
4j. The tutoring has encouraged me to become more aware of my own learning at work.	.196	.800	.323
4o. There are many here who are positively self-critical and reflect on the content of the work.	.242	.544	.645

Table 1. *Campus-and practicum-based reflection on theory and practice (ReflTP).* Specific factor: Reflection at practicum (ReflTP at W). Stand. solution (StdYX) in Mplus5. Res = residuals. Fit indices: RMSEA = 0.028; Chi2 = 11,495, df = 10 (p=0,32); CFI = 0.996; SMRM = 0,028. Initial questions: 2. How have you felt during the courses? 4. Think about your field-based education sites and how tasks related to how the educational training worked there.

Study and learning patterns	Lappr	Lappr at Work	Res
3b. I don't accept anything I've read without first carefully thinking it through.	.562		.684
3d. I'm really going to find the points in what I'm reading.	.682		.535
3f. I try to see connections between what we read and situations outside the course.	.608		.631
5c. When I learn a new task, I like to imagine and think about the consequences of different ways of doing it.	.519	.456	.523
5d. I am always interested in examining how different work-related tasks function together.	.486	.544	.468
5e. When I try something new at work, I turn the arguments over in my mind because it is important.	.614	.442	.427

Table 2. *Study and learning approaches (Lappr)*. Specific factor: Workplace learning approach (Lappr at Work). Stand. solution (StdYX) in Mplus5. Res = residuals. Fit indices: RMSEA = 0,030; Chi^2 = 10,53, df = 9 (p = 0,31); CFI = 0,996; SMRM= 0,026. Initial questions: 3. Think about how you currently work with the literature and course assignments, respectively. 5. Think about how you now obtain practical information in the field-based education.

Deep and surface learning approaches

To perceive theoretical possibilities for interpretation, students themselves have to grasp the learning task in a 'deep' way. Deep learning (Marton, 1983) approaches (Table 2) are thus included as mediating factors in the model. The general factor is dominated by items about such a deep study approach, formulated in order to operationalise Marton's (1983) concept. We alternately call this the general learning approach (Lappr), or the study approach. By 'deep' we mean engagement to seek meaning in a task, which is a supposition for reflection. The specific factor is an attempt to measure similar phenomena in working life (Lappr at Work), rather than relating them to reading literature as in Marton's case (Lander, 1996). We call the factor the learning approach at work. According to our theory for the model analysed here, practice aspects of both campus and workplace education get their own hypothesised mediating factor, and the hope is to see them in cooperation.

Approaches are seen as focused (q3d, q5d), critical (q3b, q5e), and associative (q3f, q5c), which are aspects mentioned by Marton (1983) (op. cit.), and operationalised in Lander (1996). They are not cognitive schemas or representations, but exploratory activity functions to handle learning problems. For the so-called ecological psychology, it is important to address the development of thinking as behaviour,[13] not as cognition (Gibson, 2003b). But of course, reflection upon theory and practice aims at connecting bodily perception to conceptual thinking. When Gibson (2003a, p. 286) describes learning from affordance as a more and more economic selection of useful information, we should remember that a basic idea of theory is to increase that economic efficiency.

Marton (1983) also describes a surface approach, by which students fail to explore and instead turn to root learning. He also claimed that the choice of approach is caused by situational demands. Nevertheless, Biggs (1987) argued that this explanation is truer for surface than for deep approaches, as the latter tend to be learned as valid over time by students. We do not think that a certain measure of surface approach is vital to our understanding of how affordance meets reflection. We acknowledge that deep approaches may reflect both individual and contextual influences.

Outcomes

Outcomes (Table 3) have the intellectual and learning stimulation from courses as a general factor (Out), and the specific one deals with *self-concept* in managing the work as a preschool teacher (WorkSC). The specific self-concept is a version of the academic self-concept (Marsh, Walker, & Debus, 1991), but it refers to learning at work instead of referring to an academic subject. The format has earlier been tested for a measure of health self-concept (Lander, 2002). Self-concept is seen as the ultimate outcome of the education. It is a complement, or competitor, to Bandura's (1997) concept of *self-efficacy*, which is much more detailed in measurement and deals with more specific areas of achievement. However, it has been shown that

[13] The Gibsonian view on behavioral psychology does not conform to Watsonian behaviorism.

both have predictive value. While self-efficacy seems to be a better predictor of actual achievement in an area, self-concept seems to be a better predictor of interest and emotional involvement for the same area (Ferla, Cai, & Valcke, 2006). We can, thus, interpret it as a motivational factor (Ford, 1992), making adjustment to the new situation as a preschool teacher possible in that respect.

Education outcomes	Out	Work SC	Res
2i. The content of the courses has been intellectually stimulating.	.644		.586
2u. I feel that I developed through my learning in the courses.	.835		.302
4n. I find it easy to understand how new tasks can performed in the preschool profession.	.337	.642	.475
4v. I find it easy to feel safe and effective in new tasks in the preschool profession.	.187	.570	.640

Table 3. *Outcomes of the Education (Out).* Specific factor: Self-concept in relation to practice (WorkSC). Stand. solution (StdYX) in Mplus5. Res = residuals. Fit indices: RMSEA = 0,000; Chi2 = 0,17, df = 1 (p =0,68); CFI = 1,00; SMRM= 0,006. Initial questions, see Tables 1 and 2.

The impact that reflection has upon theory and practice in a stimulated ego and its impact on the working self-concept, mediated through learning approaches, is thus the reconstructed programme theory to be tested here on two different variants of a preschool teacher education.

Methods

Investigated groups

The method is a questionnaire handed to 193 Swedish students at the end of their studies on a university programme for preschool teachers. Eighty-eight students with a nursery nurse[14] background completed their questionnaires in autumn 2009, and spring 2011; we call them *the nurse group*. Students from four semesters of the regular preschool teacher education programme (105 students) took part between autumn 2009 and spring 2011. They are here called *the campus group*. Questionnaires were administered by the students' teachers during lectures, on our behalf.

Nurses who previously worked in preschools were recruited to the preschool teacher education partly because of a lack of preschool teachers holding degrees, a problem that over time has grown bigger. These nurses in Sweden work mostly with children in preschools. Leading play, care, and other pedagogical activities is a large part of their work. They develop the pedagogical activities together with the preschool teachers, but the latter have the overall pedagogical responsibility. Students with a nurse background already had an upper-secondary education for

[14] These students have a background as nursery nurses in preschool. See an English translation in Cambridge dictionary and Whitters (2018). In Swedish preschools, they are called *barnskötare* and we have chosen to call them the nurse students or nurse group in this article.

that profession and had been recruited to the programme by getting credits for their previous work in preschools (on average 11.2 years[15]). The group of nurses spent four days a week at their workplace and one day on campus. Their field-based education was arranged as workplace learning. The basic idea was that their local workplace would afford authentic learning situations in order to integrate theory and practice. It was planned that they should work at their workplaces while carrying out their university assignments at the same time.

Students participating in the traditional campus- and field-based university education approach, that is, the campus group, first explored theory on campus and then went out into field-based education to implement their knowledge and put theory into practice, so to say. They had an average of 1.5 years of experience from work in preschool, but about half of them had no such previous experience at all.

In total, students in the campus group had 20 weeks of field-based education (practice) during their 3.5-year teacher education programme. By giving them credit for their previous work, the programme in which the nurse group took part was shortened to three years. Both groups had a common syllabus, course literature, and examinations, and were taught by the same teachers on campus, although they did not belong to the same classes. During the field-based education, each student had a supervisor from the local preschool. The campus students had mentors who had undergone a short training course in tutoring while the nurses' mentors lacked this specific training.

The response rate for the campus group was 78% and for the group of nurses 80%. The internal drop-out was very low and modelled by the EM-method (expectation-maximisation) before data were used in analysis.

Structural equation modelling and multiple regression

Analyses were done with structural equation modelling (SEM) with Mplus5, and the use of the pre-processor STREAMS (Gustafsson & Stahl, 2000) for the whole group. We supplemented this with multiple regression path analysis (IBM-SPSS 24) to gain a better ratio between numbers of participants (N) and number of parameters when we dealt with the two subgroups. Such ratios are much debated (see e.g., Iacobucci, 2010; Ullman, 2006). According to the Department of Statistics and Data Sciences (2015, p. 8) five cases per parameter estimate should be enough in SEM when data are perfectly 'well-behaved' (normally distributed, no missing data or outliers).

The SEM-analysis has 3.98 individuals per parameter in measurement and structural models together. This is because it uses nested models, which are costly in the number of relations, as some items have more than one relation. For multiple regression, the tutorial states that about 200 individuals are required, but also that '15 cases per predictor is a good general rule' and 'not unreasonable' (Department of Statistics and Data Sciences, 2015, p. 8) also in SEM. We have five predictors

[15] Questionnaire item: Have you worked at some preschool before this education? (Yes/No). If Yes for how long (either full time or part time)? …. years.

when the regression models are the greatest, which results in 17.6 individuals for the nurse group, and 21 for the campus group.

Plots for standardised residuals and fitted values were checked together with linearity of relations, normal probability plots, and collinearity. There were no multivariate outliers (Mahalanobis D^2). Latent factors in SEM got their scales by fixing one of their dependent variables to 1. Data seem to be rather 'well-behaved' and therefore it came as no surprise that an SEM-analysis with the robust MLM estimation method (adjusting for non-normality) did not change the results in any particular way from the one done with the default ML-estimator.

Fit indices for SEM were within reasonable limits (see Figure 1 and Table 1). A weakness, however, is that the number of items in two measures (outcomes and working self-concept, see Table 4) for the multiple regression were too few and therefore had low reliability. As part of a nested model, however, they worked well. We are confident that our analyses are reliable and valid, as the two methods show a very high similarity in results.

	Reflection theory-practice at campus	Refl. TP at work	Study appr. at campus	Learn. appr. at work-place	Out-come	Work self concept
M	4,02	3,39	3,89	3,82	4,44	3,91
s	0,50	0,80	0,56	0,64	0,58	0,62
α	0,71	0,82	0,70	0,76	0,69	0,60
% pos N.	92	44	85	69	99	91
% pos C	83	50	79	73	94	81

Table 4. *Means and standard deviations for the whole group of students, and percent positive in subgroups.* Means (M), standard deviations (s) and Cronbach's alpha (α) for factors used in multiple regression analyses, plus per cent with positive attitudes (>3,45) among nurse students (N) and regular students (C).

Our data do not come from a random sample. We therefore consider our models to be at what Berk (2010) called a descriptive level 1-analysis, which does not aspire to make generalisations for a population or to make causal claims other than tentative ones. This was a case-study and the models investigate some aspects of a programme theory for that case.

Measures in nested models

Table 1 gives details of the nested models in use.[16] The questionnaire used five-point Likert scales (Are these claims appropriate for you? Responses from *not at all* to *highly*). An earlier explorative factor analysis was done by principal axis extraction (oblique rotation, Direct Oblimin, in IBM SPSS 24; Lander, 2012).

[16] The multiple regression path analysis separates the learning approach for studies from the approach for work, and tests if the former influences the latter. The analysis of outcome and work self-concept is treated likewise, with the general outcome thought of as influencing the work self-concept.

Based on this and theoretical considerations, factors were chosen to be tested by Cronbach's alfa (Table 5) and by confirmatory factor analyses (Table 1).

Dep↓/ Indep →	Refl.TP	Refl. TP at Work	Learn. appr	LA at Work	Outcome
SEM. Total group					
Outcome	.65	–	.52	–.33	x
Work Self-concept	–	.45	–	.37	x
Mult. regr. Total group					
Outcome	.58	–	.28	–	x
Work Self-concept	.17	.33	.12	.22	.16

Dep↓/ Indep →	Refl.TP	Refl. TP at Work	Learn. appr	LA at Work	Out /qual
Mult. regr. Subgroups					
N: Outcome	.51	–	.32	–	x
N: Work Self-concept	.15	.23	.42	–	–
C: Outcome	.60	–	.27	–	x
C: Work Self-concept	–	.43	–	.20	–

Table 5. *Total standardized effects from figure 1 (SEM), and from multiple regression for subgroups.* N: Nurse students; C: Campus students. (-) = No relations, or with coefficients < 0,10, and excluded. x = Not adequate.

All factors in SEM were made up as nested models to improve specificity. A nested model has a general factor that aggregates variation from all indicators (items), but some indicators are also connected to one or more specific factors. The indicators which are only tied to the general factor to a high extent determine what kind of variation this factor draws from indicators also belonging to the specific factors. The specific factor thus becomes purer, as variations that are common with other items are withdrawn. This is shown more technically in Tables 1–3. We now present our measures and results more in depth.

Results and interpretations

In Table 4, means and standard deviations for the whole group of students, and percent positive in subgroups, are shown for each of the factors. The outcome of the programme is acknowledged by almost all. General measures heavily related to the campus education have positive opinions (i.e., grade 4 or 5 on the scales) of about 80–90 per cent (Reflection theory-practice; study approach). On the other hand, when going down to 80%, it means that one fifth of the students are not very satisfied.

The analysis is presented through two themes. The first theme is *campus, workplace, and reflection*, where both student groups are analysed together. The second theme presents a subgroup analysis linked to the theory-practice complex.

Campus, workplace, and reflection

Reflection about theory and practice at the workplace was only recognised by 44 or 50 per cent of the students, and the learning approach at the workplace was claimed to be used deeply by about 70 per cent. The item (q4d) about the mentors' interest in taking up theory when discussing practical tasks for the first factor was especially low in both groups (1/3 pos.), but the same number of nursing students thought that staff (q4i) were interested in such matters (while 44% of campus students did). The other two items (q4j, q4o) showed positive opinions for 44–56 per cent. The ambition of cross-fertilisation between theory and practice in situ was thus sustained for only about half the students.

Similar messages from all analyses about a practice-theory cleavage

The SEM results for the whole group of students are shown in Figure 1. Table 5 shows total effect data from both Figure 1 and a parallel analysis of subgroup data by multiple regression. Results in the two models seem remarkably alike, with one exception: The SEM analysis shows a negative relation of some magnitude between learning approach at work and outcome. In the multiple regression models, a very small negative relation, far from significant, first showed up, but was taken away. A similar result was shown in the MLM model tried, that is, a nonsignificant small negative coefficient. If we accept this negative sign, it can be interpreted that those students claiming a deeper learning approach at work were somewhat more negative towards the outcome, that is, the overall quality of the programme. It may represent a critical understanding of missed opportunities on behalf of the programme.

The results, however, give us some reassurance that the relatively low number of individuals for the SEM analysis is not a big problem here. In the SEM model in Figure 1, there is a very obvious division between the campus and the workplace content and experiences. Working self-concept is only related to what happens at the workplace in terms of both reflection and learning approach. The outcomes of the programme in terms of stimulation and learning from courses are only related to the campus experiences, except for the negative influence of learning approach at the workplace that was noticed.

In the upper section of Table 5, total effects for both outcomes and the total groups are calculated with a threshold of at least ≥ 0.10. The theory-practice cleavage is clear in both analyses: reflection on campus concerns mostly intellectual stimulation and course learning; reflection at workplaces concerns mostly working self-concept.

Campus and workplace - two different reflection environments

The two kinds of reflection environments in the programme thus merge very little. The models assume that this happens in two ways, either directly or by mediation from learning approaches. Figure 1 (and the parallel multiple regressions) shows mediating effects, but relatively weak ones. For SEM, they show the same pattern as above: learning study approaches 'only mediate' stimulation and course learning

as outcome. Learning approaches at work mediate positively only to self-concept at work, and negatively to other outcomes (Figure 1). However, no kind of learning approach relates to theory-practice reflection at work, only to such reflection on campus.

Subgroup analyses

In a subgroup analysis (Table 5) we noticed that the theory-practice complex at the workplace seems to have had a bigger impact on the campus students than on students who were nurses. Reflection upon this at the workplace affects the working self-concept of both groups, but twice as much among the campus students. A deep learning approach at work affects only the campus students' working self-concept.

Campus students as active agents in both arenas

Campus students thus seem to have had more effective work discussions and learning approaches at work in terms of affecting their self-concept for preschool teacher work. Campus students are most likely relying on their participation in an internship that can be described as a community of practice (Wenger, 1998) or learning environment in preschool, but as activities at work are new things for most of them, they probably feel more affected by them. We can imagine that they are more active agents in affordance processes at work, eager to learn about a new environment. At the same time, this may hamper the influence from general learning approaches compared to the nurses' experiences. Campus students, with relatively little work-experience at preschools, need to get both the study approach right and then the learning approach at work right, to incorporate the campus content of reflection into their self-concept for the new job, and the latter relation is therefore missing in Table 5.

Nurses without deep learning approaches at workplaces

The nurses' working self-concept is only affected by reflection on theory—practice at work (to some extent), and not by deep learning approaches at work. Instead, what is happening on campus, in terms of reflection and deep learning approaches, is more influential for their working self-concept. As they have turned away from an earlier chosen nursing profession, of which they have much or a good deal of experience, to a new profession, their activity in affordance processes is relatively more challenged by what is happening on campus and that demands learning approaches for studies.

However, reflection at the workplace is not without influence on their working self-concept when it takes place. But learning approaches at work do not influence their working self-concept. We may think that they are already engaged in discussions at the workplaces, mostly as nurses, and not so much as preschool teachers-to-be, and therefore their deep learning approaches at work concern nursing tasks. They may experience a dilemma in attempting to become peripheral

participants in preschool teacher communities and at the same time meeting expectations from their colleagues about the job as usual. These expectations and discussions seem seldom to actualise deep learning approaches at work connected to theorising. The nurses seem to undergo restructuring efforts, as the learning from texts and seminars is taken into the self-concept for work, but that is not being mediated by deep learning approaches at work.

We may thus speculate that nurses, through their habits when among colleagues, already had functioning and institutionalised learning approaches at work for daily problem-solving, which are not so easily changed to be a new part of the working self-concept. Campus students are not hesitating in this regard because their self-concept is newer, and not in need of restructuring, the way the nurses' self-concept is. Campus students seem to be managing deep learning of two kinds at the same time for the benefit of their new self-concepts, while the nurses' problems are about restructuring their self-concepts directly from study approaches, without the help of related learning approaches at work.

Student outcomes and deep learning approaches

We may also ask about the relatively low outcome as intellectual stimulation and learning. The message is that you can be content with your education without using deeper learning approaches but that it is better if you also use the latter assumed for studying (but might be hampered by using a deep learning approach for work). Calculating this with the help of the parallel multiple regression model, the role of influence coming from reflection on campus (Refl. TP) directly is 81 per cent and from the study approach mediation consequently 19 per cent.

Making the same calculations for subgroups, the direct effect for the nurses is 78 per cent, and for campus students 82 per cent. The nurses may have struggled more, needing a deeper study approach, having to do with texts and seminars, than campus students did, but the main message for all is about low mediation from learning approaches concerning the stimulation and learning on courses. Given that the measures of deep approaches of both kinds are valid, this may also show us that course demands have not been adequate for a great many students.

Discussion

The aim of this study was to investigate how preschool teacher education students within two different educational models and learning environments are afforded opportunities of learning and reflection in relation to the theory-practice complex. While most students in the study were satisfied with aspects of their education, only around half of the group acknowledged the way theory-practice reflection was treated at workplaces during practicum. Interpretations of SEM and multiple regression analyses of student responses could easily show a clear division into what was done mostly related to campus and mostly related to workplaces.

Analyses thus provide support for seeing campus education and workplace education as bearers of two different fields of affordances over theory-practice reflections, which is also in line with Rietveld and Kiverstein's (2014) argument. Reflections upon theory and practice in these two educational environments had different consequences: outcomes such as stimulated intellectual development and learning were connected to campus reflection, and self-concept for work was connected primarily to workplace reflection. Learning approaches of two kinds—for study and for work—were thought to mediate reflection in the two educational environments as well as the outcome and self-concept.

Mediation was present in the case of outcomes of stimulation and learning, but to a lesser extent than expected and perhaps in a more negative way between the learning approach at work and outcomes, possibly mostly concerning nurses. The general learning approach, mostly connected to campus, had a mediating function for the nurses' working self-concept, but for campus students this mediation also went through their learning approach at work.

This can be interpreted as two different types of affordance that campus students and the students who were nurses are facing. Campus students had to deal with both learning approaches for study and for work, in order to take advantage of campus reflection for their self-concept. The nurses tried to use study approaches directly for restructuring their self-concepts and did not seem to be helped by learning approaches for work. An explanation for these two types of affordance would be that the knowledge production and learning processes are structured and organised differently in campus and field-based education, and that the campus students and the group who were nurses handle this situation in two different ways (Billett, 2011; Costley & Armsby, 2007).

For their self-concepts, both groups were dependent on discussions (about theory and practice) at the workplaces, but campus students twice as much so than the nurses. Workplace discussions were not helpful in using deep learning approaches at work for either group; nor did they stimulate general learning approaches for study. We think that collective affordances in workplaces were mostly related to matters of daily problem solving, and not related to trying to adjust established repertoires for this with the help of theory. In a way, we think that this became a void for campus students, and affordance blocking for nursing students, in their attempts to build a new self-object, or to restructure their self-objects, to suit the preschool teacher roles.

In an earlier version of this analysis, we used four items for measuring attitudes toward the examination, both in terms of academic and practical tasks. We took that factor away as it turned out to be a dead end. It did not relate to theory-practice discussions at work or to either of the two learning approaches, but only to discussions on campus. It did not affect intellectual outcomes or self-objects. Thus, it would not improve our model. However, it reveals a missed opportunity in the programme theory that we investigated, as exams are known to have an impact on educational processes and results.

In this case, only campus teachers constructed examination tasks with no input from workplace mentors. By relating only to campus discussions, the examination contributed to the dichotomy between theory and practice, which is what Garraway (2010) predicts.

We can see (at least) one weakness in the analysis. The measures of theory-practice discussions in the two arenas may implicitly also cover other aspects, as there are no other measures of them. Questionnaire items are about reflection, but also about who takes part and about course content, supervisor behaviour, and so on. This may blur the results a bit, but it does not undermine the main conclusions.

Conclusions

The analysis shows that the two educational environments, the campus and field-based education (workplace) afford two different ways of reflecting on theory and practice, which both student groups must adhere to. The analysis also shows that there are differences between campus students and those who were formerly nurses in the way they relate to the affordances from the educational environments, and this is probably based on their educational background and experiences. This observation is important and has rarely been the subject of discussion or reflection regarding this form of teacher education in Sweden.

Although the study's empirical material is from the years 2009–2011, the study's focus and analysis are highly relevant. The discussion about reforming and strengthening teacher education is constant and ongoing in Sweden[17]. Both Bronäs and Selander (2015) and Karlsson Lohmander (2015) point out that teacher education is too theoretical and that the connection between theory and practice must be strengthened. Likewise, more and more teacher education programmes today organise their activities through various hybrid models and practice schools. We think that our measures and design may contribute to the evaluation of such models.

The analysis is in line with both Rietveld and Kiverstein (2014) and Withagen et al. (2017) who pointed out that how the students receive the environment's affordance depends on skills and knowledge that they have acquired before and during their teacher education. It is this knowledge and experience that makes the two student groups relate differently to the affordance they receive from campus studies and workplaces as educational environments.

What implications should this analysis have for preschool teacher education in Sweden? Our analysis shows that neither of the two models was in line with earlier policy intentions (SOU 1999: 63). The programme did not become the kind of 'hybrid' teacher education that Eriksson (2009) and Lenz Taguchi (2010) sought. It looks like the programme that was investigated relied too much on the individual

[17] Reform of teacher education. Retrieved 19 October 2020 from https://www.regeringen.se/pressmeddelanden/2019/10/reformering-av-lararutbildningen/

student's reflection as the solution to the transfer problem, which Zeichner (2007) also claims is dangerous. This reliance seemed to work somewhat better for campus students, who were more challenged by the (for them) new environment in practice, and its affordances. The students within the field-based education are very close to the preschools' pedagogical micro-practice, which especially for students who are nurses, limits the possibility of a critical reflection on theory and practice and its contextual conditions. We interpreted our findings as indicting that workplace routines and norms structure the students' learning and professional knowledge instead (Billett, 2011). For both groups, but especially for nursing students, the boundary zones evolving between theory on campus and practice at the workplaces were too weak and fragmented. It ought to be further investigated if the training of campus students' mentors had a different impact on the groups, but our result does not point to that. Still, a better-organised boundary zone must build on 'expansive learning' (Engeström & Sannino, 2010), that is, students, campus teachers, and mentors need collectively to be engaged in constructing and implementing more hybrid forms of education which allow more horizontal learning (Gutiérrez, 2008). It also seems important to have new forms of examinations that contribute to a deep learning approach.

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