

Crossing university boundaries: Students' experience of PBL as a new epistemic game

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Abstract: Today, educational trajectories take university students through a range of different institutional and organizational contexts. Many students choose to earn their master's degree at a university different from their bachelor university. This increased mobility causes many students to cross university borders, both nationally and internationally. While the principles of collaborative learning, student-centered pedagogic approaches, and engagement with real-life problems are now widely applied principles at most universities, and are also promoted through large-scale transnational policy processes such as the Bologna Process, a few universities have demonstrated their strong commitment to such principles by dedicating themselves to the pedagogic approach of problem-based learning (PBL). This commitment may further internal cohesion and the development of a distinct and recognizable identity. In other words, a university's commitment to the teaching and learning philosophy of PBL creates *identity boundaries* (Santos & Eisenhardt 2005). This study explores the experience of students who cross these boundaries and make an effort to learn PBL, in other words, to study in a PBL context. Theoretically, PBL is understood as an overarching epistemic game (Perkins 1997; Markauskaite & Goodyear 2017a) that students seek to master. The empirical investigation was carried out at a PBL university that strongly encourages group work. Three focus group interviews were conducted at two different points in the project-writing period: once mid-term, when the project work was ongoing, and at a later point right after the (collective) oral defense of the project work. The findings suggest that while students seek to identify clear and manifest rules of the epistemic game of PBL, supervisors and censors expect students to be able to "learn through design of inquiry" (Markauskaite and Goodyear 2017b), in other words, to make their own choices regarding the epistemic framework.

Keywords: problem-based learning, multicultural groups, epistemic game, higher education mobility.

1. Introduction

In today's global higher education market, the individual university can gain much from developing a distinct profile that is attractive to students both nationally and internationally. While the principles of collaborative learning, student-centered pedagogic approaches, and a socially relevant and engaged curriculum are now widely applied at most universities and are also promoted through large-scale transnational policy processes such as the Bologna Process, a few universities have demonstrated their strong commitment to such principles by dedicating themselves to the pedagogic approach of problem-based learning (PBL). Offering students a different learning experience may help PBL universities to stand out from the crowd. In order to achieve this, the teaching and learning philosophy of PBL must figure prominently in the university's presentation of itself. In Santos and Eisenhardt's words, PBL functions as an *identity boundary*, creating internal cohesion and external recognition (Santos and Eisenhardt 2005). The present study takes an interest in students who cross these boundaries and enroll at a Danish PBL university (hereafter referred to as "the PBL university"). The group of boundary-crossing students is composed of both Danish and international students. PBL-organized programs often involve extensive periods of group work (e.g. Christensen 2016), and multiple studies have already addressed collaboration problems in multicultural project groups (e.g. Burdett 2014; Harrison & Peacock 2010; Strauss & Young 2011). It is important to note, however, that domestic students may find the transition from a non-PBL to a PBL university challenging as well. Hence, the present study addresses the experience of all students who cross university boundaries.

Theoretically, the study understands boundary-crossing as involving a transition from one epistemic culture to another (Knorr-Cetina 2007) and the expectation that students learn to master new epistemic games (Perkins 1997; Markauskaite & Goodyear 2017a). Thus, the paper establishes a framework for understanding the epistemic implications of crossing university boundaries. Furthermore, it investigates these implications empirically through a study of three multicultural student groups consisting of students representing different nationalities and different levels of PBL experience. The groups were interviewed twice in relation to their semester projects: once in the middle of the working period and once after their oral project exam.

This contribution to the special issue on boundary-crossing focuses on students who cross organizational boundaries to pursue academic careers. The students have been raised in particular cultural and disciplinary traditions, which they carry with them into new learning settings. On the one hand, this may cause clashes with domestic customs (and students), as demonstrated in much of the literature on multicultural groups (e.g. Harrison & Peacock 2010). On the other hand, boundary-crossing may also contribute to an enrichment of learning cultures and the availability of new resources, for example in relation to the number of languages spoken (Leki 2001). This study offers a micro-level analysis of how student groups at a PBL university handle boundary-crossing, in other words how they handle the associated challenges and benefits of the opportunities that are enabled precisely through boundary-crossing. Thus, the analysis seeks to answer the following research questions:

Which form of epistemic game do students expect PBL to be?

How do they experience the teachers' expectations regarding their mastery of the PBL game?

What are the consequences of these expectations for students who cross university boundaries?

2. Epistemic approaches to collaboration in student groups

Although group work dynamics in university education has received some scholarly attention (Strauss et al. 2011), surprisingly little is known about the role of knowledge in such collaborations. More is known about the social, intercultural, emotional, and gender aspects of student group work than about, for example, the differences in group work dynamics across disciplines or the influence of the kind of knowledge that students are expected to engage and develop in their group work. Given the fact that students are expected to be able to function as professionals in knowledge-intensive contexts, in which they are required to not only draw on acquired knowledge but also continuously renew their profession's knowledge base, knowledge practices in student groups need to be subject to more intensive research efforts. Consequently, the following contributions to a theoretical understanding of collaborative epistemic practices have largely been identified in the literature on professional work and not in the literature on group work rooted in educational settings.

2.1 Epistemic culture

The field of intercultural communication offers a rich vocabulary when it comes to explaining how cultural differences may trouble both interpersonal relations and teamwork. However, the study of encounters between educational traditions and epistemic cultures sits uncomfortably in the intellectual frameworks that are most common in this discipline. While the categories of nationality and ethnicity often dominate research agendas in the field of intercultural communication (Moon 2010), educational cultures escape such categorization. On the one hand, higher education cultures

understand themselves as being inscribed in a global rather than a national order. Significant familiarities exist, for example, among the university cultures of Northern Europe, which often consider themselves as the heirs of the Humboldtian university (Josephson, Karlsohn & Östling 2014), even if the influence of Anglo-American university systems has grown stronger (Ramirez 2006). On the other hand, disciplines often generate much more profound cultural differences and similarities between academic practices than do either national or regional traditions. Interdisciplinarity may generate as many misunderstandings and collaboration problems as interculturality understood in terms of nationality or ethnicity (Davies 2016). In other words, interdisciplinary and multicultural academic contexts offer a rich variety of manifestations of disciplinary and regional/national traditions and cultures. A mundane example: conventions for writing a social science paper may differ between a German and an American university, as would conventions for writing papers in history and sociology (Rienecker & Stray Jørgensen 2013). What we need to recognize is that students – both international and domestic – may cross multiple boundaries when engaging in multicultural group work. An investigation of precisely *which boundaries* becomes part of the empirical investigation of concrete contexts. Consequently, if we are to understand the importance of boundary-crossing in multicultural project groups at a PBL university, concepts must be developed that accurately reflect the academic context and the type of work that students are expected to perform in this context. In this contribution, the literature on *epistemic cultures* and *epistemic games* will be explored in order to establish a vocabulary enabling the analysis of the importance and impact of the differences in terms of academic experience and familiarity with particular educational cultures.

A key contribution to the understanding of knowledge work in contemporary societies is offered by the sociologist Karin Knorr-Cetina and her notion of *epistemic culture*, defined as “cultures of creating and warranting knowledge” (Knorr-Cetina 2007: 363). Addressing, firstly, the diffusion of scientific epistemic practices to broader segments of society, she points to macro-level changes in the role of knowledge in society (Jensen, Lahn & Nerland 2012). Knorr-Cetina (2007) observes: “The extent to which lifeworld dimensions of epistemic settings are reproduced in other areas says something about the depth of current transformations and the reach of knowledge cultures” (371). In other words, cultural practices characteristic of certain epistemic contexts (e.g. diagnosis and medical research) are adapted by lay people (performing self-diagnosis and research in illness and disease using internet-based material and internet fora).

Secondly, Knorr-Cetina also makes clear that epistemic cultures differ from domain to domain. Referring to Knorr-Cetina’s work, Jensen, Lahn and Nerland (2012) explain that “these logics and arrangements [of epistemic cultures] carry features that are distinctive for the knowledge domain in question and thus provide analytical means for distinguishing between different domains and disciplines” (6). The virtue of the concept of epistemic cultures is that it “adds a more explicit concern for the role of knowledge” and “integrates and highlights the relationships between the epistemic practices in play when knowledge is created, distributed and validated” (8). The notion of epistemic culture is linked to a broader reflection on the knowledge concept itself, where the focus is on an understanding of knowledge as the product and producer of power relations (Foucault 1980) and as being embedded in specific social and cultural contexts (Knorr-Cetina 2007). As Knorr-Cetina explains, understanding knowledge as situational, contextualized and embedded in social practice, rather than as universal and objectively true, calls for new research approaches in the form of field and site explorations. This has resulted in an acknowledgement of the diversity of knowledge-creating and warranting practices: “Epistemic unity is a casualty of the cultural approach to knowledge production” (Knorr-Cetina 2007: 364). The diversity of knowledge production practices is closely linked to the materiality of the research processes: what the research objects are, where they are studied, and with what instruments and methods. “The focus on practice moves the level of analysis ‘down’ to the realm of material regularities and the ways these are associated with the material”

(Knorr-Cetina & Reichmann 2015: 873).

While disciplines and professions share epistemic practices across national and regional borders, they are also governed by what Knorr-Cetina calls “macro-epistemic” arrangements, which are the national and international constellations of institutions monitoring and approving the truths produced in local epistemic contexts. Actors in macro-epistemic arrangements include universities and international publishers, but also actors in non-academic epistemic systems such as international rating agencies that evaluate the economic health of states and financial institutions (Knorr-Cetina 2007).

The notion of epistemic culture has been used to explain the challenges of interdisciplinary collaboration (Mørk et al. 2008). Detailed qualitative studies on collaboration issues related to differences in terms of epistemic cultures are rare. Mørk et al.’s study reveals how a collaboration project between professionals with highly advanced technical skills and scientific knowledge failed to realize the full potential of a collective knowledge pool that included nurses, engineers, medical doctors, radiologists, and radiographers. Nurses and radiographers, especially, experienced barriers to having their practice-based insights included in the project because their knowledge was not founded on the most recognized forms of medical knowledge (randomized clinical trials), but rather on everyday experience with patients. This study illustrates how certain boundaries are never crossed because of the clash of institutionalized epistemic cultures. Members of practice-oriented professions were simply never invited to contribute their knowledge to a project because their knowledge was only deemed relevant to the actual implementation of the research design.

Summing up, we can characterize the merits of the notion of epistemic culture as threefold. Firstly, for a discussion of interdisciplinary and multicultural group collaboration, it provides a needed focus on the core of such collaborations: the production of knowledge. Collaborators may originate in different national contexts, but the notion of epistemic culture urges the observer to focus on such differences only if nationality is connected to relevant differences in *epistemic* cultures. As indicated above, differences in epistemic cultures seem to be more associated with regional differences than national ones. As is the case with national stereotypes, stereotypes in relation to epistemic cultures must be addressed critically (e.g. “the Chinese learner” (Chan 1999)). That being said, the differences in macro-epistemic arrangements are likely to engender different epistemic approaches in students. For example, the turbulence in the higher education systems of post-communist countries (Dakowska 2014), the highly competitive higher education systems of China and South Korea, and the rights-based and publicly funded higher education systems of Scandinavia inevitably leave very different marks on students raised in these systems. Secondly, similar to Foucauldian and practice-theory-based contributions, the notion of epistemic culture points to the relativity of scientific truths and to the value of “neglected knowledges”. Concretely, the medical and engineering scientists in Mørk et al.’s study produced publishable scientific knowledge on improved surgery through new imaging technology. However, the nursing knowledge on increased post-operative pain was not recorded and recognized to the same extent. Thirdly, the notion of epistemic culture provides a concept that enables the analysis of difference and its importance in the context of today’s multiplicity of interdisciplinary and interprofessional collaborative projects.

2.2 *Epistemic games*

Another concept often related to the notion of epistemic culture, the *epistemic game*, offers an even more finely tuned instrument for the identification of knowledge-related differences in cross-boundary collaboration. Initially, this concept was suggested as an idea countering the notion of situated and culturally embedded epistemic processes. When introducing this concept in 1997, Perkins claimed that the notion of epistemic games represented a counter position to Lave and Wenger’s emphasis on situatedness, as introduced in their seminal work *Situated Learning: Legitimate Peripheral Participation* (1991). He argued that it is possible to identify general

intellectual processes – the so-called epistemic games that human beings engaged in inquiry perform across disciplinary and professional boundaries and across the boundary between scholarly/professional thinking and thinking in everyday contexts. He identified three basic epistemic games: characterization, explanation, and justification. When we make claims about the nature of things, we engage in the epistemic game of characterization; when presenting how a certain situation has come about, we engage in the epistemic game of explanation; and when we defend our claims against criticism, we engage in justification. All three types of epistemic games are characterized by having a form, a set of goals, a set of moves, and finally a set of rules. Fulfilment of these four criteria justifies the reference to these intellectual processes as “games.” These overarching types can be divided into more specialized types. For example, establishing a typology or a set of categories that enable categorization would constitute a specialization of the characterization game. In the same paper in which Perkins suggests that epistemic games can be seen as general and overarching, he introduces the idea of specialized epistemic games and the understanding that different specialized epistemic games are played in different professions and disciplines.

There is a bond between the demands of particular disciplines or professions, as they have been socially constituted, and epistemic games. One can hardly function as a mathematician without facility in handling axiomatic systems and deductive proofs. One cannot deal with the law in any serious manner without facility in dealing with rule and precedence-based reasoning. While some disciplines and professions may not demand mastery of highly specialized epistemic games, other disciplines and professions plainly do (Perkins 1997: 57).

This position is obviously very close to Knorr-Cetina’s analysis that disciplines and professions are characterized by different epistemic cultures. The idea that different epistemic games are played in different epistemic cultures has been further elaborated in the work of Markauskaite and Goodyear (2017a), who define the epistemic game as a “form of action that entangles rules of thought and rules of culture with affordances and constraints, symbolic inscriptions and the physical world” (396). Markauskaite and Goodyear (2017a) developed a comprehensive taxonomy of professional epistemic games encompassing the following basic types: the propositional game, the situated problem-solving game, the meta-professional game, the trans-professional discourse game, the translational public discourse game, and the weaving game. The propositional game involves contributing to the profession’s knowledge base primarily through research activities (research games, concept combination games, conceptual tool-making games). Situated problem-solving games involve applying professional knowledge in professional action. They range from producing solutions to a broad category of similar types of problems to the creation of solutions to situation-specific problems. These games “are highly contingent on a specific instance and situation” (Markauskaite & Goodyear 2017a: 411). The three types of discourse games all involve explicating elements of the profession’s field of knowledge, but with varying audiences. Meta-professional discourse games involve the articulation of knowledge within the profession (e.g. the articulation of tacit knowledge), trans-professional discourse games involve the import and export of knowledge across disciplinary and professional boundaries, and finally, the purpose of the translational discourse games is to communicate to the public outside the profession or discipline, creating epistemic tools that can be used by such a public audience (e.g. patients). Weaving games are games that involve the combination of some of the above-mentioned games, but in a way that fosters a positive change in the situation. Teaching in a way that not only meets the curricular requirements but also responds – in the situation – to the interests and needs of learners, the atmosphere in the classroom, and other situational factors would be an example of the weaving game.

2.3 Problem-based learning understood in terms of epistemic games and epistemic cultures

The concepts of epistemic culture and epistemic game are to be used in a specific context that calls for some additional theoretical reflection. Multicultural collaboration will be studied in a university that places a strong emphasis on group work, interdisciplinarity, and problem-oriented learning. This emphasis is articulated in the institution's principles of problem-based learning (PBL): the problem as the point of departure, project organization, student cooperation, exemplarity and responsibility for one's own learning (Aalborg Universitet 2015). Whereas the university hosts a multitude of disciplines, specializations, and interdisciplinary fields representing a broad variety of epistemic cultures, all programs need to adopt what can be understood as one overarching epistemic game. The principles specify at a general level the goals (employment-relevant learning, the acquisition of communicative, collaborative, analytical, and results-oriented competences), the "moves" ("a time-limited and targeted process in which a problem may be phrased, analysed and solved, resulting in a tangible product" (Aalborg Universitet 2015: 4), the form (group work, supervision), and rules (point of departure in an authentic problem, the problem must be exemplary). In other words, the institution's principles satisfy the conditions for defining PBL as an epistemic game.

Given that this game needs to accommodate different epistemic cultures, it is less clear to what extent we can characterize PBL as a *specific* epistemic game according to Markauskaite and Goodyear's typology, which states that epistemic games played within educational and research settings are primarily propositional games. These are games aimed at developing and disseminating a discipline or profession's knowledge base. It is important to note, however, that there is a strong emphasis on outreach in the university's PBL principles. Students are encouraged to collaborate across project groups and, first and foremost, with (business) partners outside the university. They are also required to address authentic problems (problems that are experienced as pressing problems outside the walls of the university). Importantly, the student's work must also be "exemplary," meaning that what the students choose to work on and the way they go about it should bear some resemblance to how similar problems are addressed in professional (post-educational) situations. In other words, students are required to combine propositional games with problem-solving games. One might even say that the particular problem orientation of the university comes to the fore in the request that students take on such games. All higher education and research institutions require staff and students to play propositional epistemic games; however, they normally do this without demanding that students address specific types of problems (authentic ones) and without requiring students to establish the form of close connection to employment settings that is referred to as exemplarity.

It is also remarkable that the problem-solving game is here presented as the agenda-setting game, whereas propositional games are presented as subordinate in the sense that they support and assist the players in playing the overarching problem-solving game (i.e., the problem, not the discipline, governs the work process; students do coursework *in order to* use presented theories and methods in their project work). In other words, if the principles are taken at face value, profession or employment-oriented problem-solving games are put in the driver's seat of the epistemic machinery of PBL, whereas propositional games take on an ancillary role.

Markauskaite and Goodyear (2017a) point out that it is characteristic of games that rules, goals, well-defined forms, and moves are combined with flexibility, allowing for both mutual understanding and individual creativity (Markauskaite and Goodyear refer to Wittgenstein's notion of language games, but also to Bourdieu for a more structure-oriented game concept). In the PBL game, flexibility pertains to two aspects of project work: the content of the project (as long as it stays within the framework of the curriculum) and what is referred to as responsibility for one's own learning outcomes and the organization of one's own learning processes. The PBL principles phrase this largely as a collective responsibility. The epistemic game approach seems to offer little in terms of understanding a concept like responsibility for one's own learning. Epistemic games are always played in collectives according to socially set goals and rules and with shared understandings of

accepted moves and forms. Learning implies becoming a better player and mastering an increasing number of games. Markauskaite and Goodyear's model is a taxonomy, implying that students advance through the acquisition of the skills required to play new types of games. Obviously, playing the problem-solving game in a real-life setting is associated with independence and responsibility and as such is more advanced than propositional games. Using the example from pharmacy provided by Markauskaite and Goodyear, handing out the correct medication and providing adequate information to the patient is a more complex and consequential act than presenting the required propositional knowledge in a paper. But new players in both games have been taught how to play the game during their training and within communities of experienced peers. Markauskaite and Goodyear emphasize: "The focus for teaching is to devise ways to help students master the rules and principles that guide knowledge-producing conversations in specific epistemological frameworks: to help them become skillful in playing the epistemic games of the discipline or profession" (564). In other words, ensuring that students master the game is understood as being a joint responsibility of teacher and learner.

In contrast, students playing the PBL game are in some respects asked to devise their own version or specialization of the game. This request is made in relation to the content (determined by the problem formulation) and the organization of the work process leading to the completion of the project. Markauskaite and Goodyear address such levels of freedom and responsibility only in relation to learning activities aimed at teaching students to address a specific type of problem termed a "wicked problem". Wicked problems are ill-defined and dynamic problems; even the character of the problem is contested and subject to debate among stakeholders who have differing interests in relation to the problem (Alford & Head 2017). Wicked problems change as they are addressed. Wicked problems do not have optimal solutions, and the proposed solutions will often produce both desirable and undesirable effects. Important in relation to learning contexts is the fact that existing knowledge is inadequate, and no known methods will yield satisfying results when applied to the problem. Learners engaging such problems will have to "learn by designing their inquiry" (Markauskaite & Goodyear 2017b: 580). The fact that "Wicked systemic problems are increasingly common in many professional domains" (Markauskaite & Goodyear 2017b: 580) is a challenge to educational systems, while learning by designing the inquiry is a form of learning that is difficult to facilitate.

Firstly, this form of learning is only possible if content learning is associated with a form of *second-order learning* involving seeing the discipline, the course, and the communicated knowledge as an *epistemic device* (Markauskaite & Goodyear 2017b: 585). Concretely, this refers to the student's awareness that, for example, a discipline's preferred methods, valued theories, and foundational problems in themselves form the student's understanding of an issue, and that multiple other approaches are possible and equally valid. At the same time as the student adopts the knowledge of a course or a discipline, he/she also realizes that this knowledge is purely a lens with its own affordances and constraints. Learning always takes place against the backdrop of a critical awareness of alternatives and of a plurality of possible perspectives. Secondly, when students work on their own on projects or on other types of student-directed work, they find themselves in the role of "designers". They must choose among methods and be able to critically evaluate the affordances and constraints of these methods: "the focus on the use of a range of techniques and tools for knowing, the need to choose, and adapt them to the situation, and finally to use them in action, makes explicit the role of learners as designers of their own epistemic practices" (Markauskaite & Goodyear 2017b : 586).

Leaving students to design their own epistemic game (within the overall framework of the PBL game) undoubtedly comes close to the notion of *learning by designing inquiry*. There may well be good reasons for adopting such an approach: as noted by Markauskaite and Goodyear (2017b), students increasingly need to engage wicked problems – wicked problems may indeed be another term for the notion of *authentic* problems. Non-wicked or "tame" problems may not qualify as problems because the knowledge, expertise, and methods applicable to such problems already exist and can be identified. At the same time, if this form of learning is to be achieved, students need to

“learn how to learn” by design; in other words, they must be able to identify a wicked (authentic) problem, design the inquiry towards that problem, and understand the limits of their own design.

Vis-à-vis such demands, the following analysis will address the research questions in relation to students who have crossed university, discipline, and/or national boundaries.

3. The study

The study took place in the fall of 2017 and involved three multicultural project groups who were interviewed twice in the course of their work on their semester projects. At the PBL university, which is founded on the abovementioned PBL principles, semesters are normally divided into two periods: an intensive course teaching period and a subsequent (equally intensive) project writing period, in which the students’ work is supervised by a member of the academic staff. Students are strongly encouraged to work on and write their projects in groups, and most of the students do so. As the result of their project work, they finally hand in a lengthy academic text called a project report, which usually takes the form of an extensive research paper. The written work is considered a joint accomplishment, but the students are graded individually based on their performance in the oral exam (which is a group exam). As has been reported elsewhere (Moore & Hampton 2015; Strauss, U-Mackey & Crothers 2014), graded group work in heterogeneous groups often creates tensions among students because the contribution of each individual student influences the collective result. For this reason, students often express concerns regarding group composition and try to find group members who share their level of ambition and conscientiousness. This was indeed the case in the three groups that participated in the study.

Two of the groups consisted of three students and one group consisted of five students. All groups were multicultural in that they were composed of Danish and international students (students from Eastern Europe and Germany). Some of the Danish students had completed their bachelor degree at another Danish (non-PBL) university. The groups participated in focus group interviews in the sense that the interviews were conducted with the group and not with individual members. The groups were interviewed once in the middle of the working process and once when they had completed and handed in their project and participated in the oral defense of the project. It turned out to be very valuable to include the exam experience in the study. Especially when it came to the exam experience, concerns and insecurities related to the epistemic game of PBL came to the fore.

In order to identify relevant participants, a larger pool of multicultural groups was contacted and asked if they could imagine participating in the study. Three groups volunteered to do so. Among the groups who politely declined to participate, the reason for non-participation was mainly lack of time due to project writing. It should be noted that the fact that students volunteered to participate may have contributed to a certain bias in the study. Willingness to devote time to the study indicates that these students already felt relatively successful. During the interviews, the students would sometimes refer to *other* groups and students for whom things did not work so well, for example, groups experiencing collaboration problems. Unfortunately, attempts to include such groups in the study were unsuccessful, which may be related to the method used to select interview participants (voluntary participation).

The format of the focus group interview was chosen because of the interest in knowledge-creation practices as a joint accomplishment of the project group. How do group members establish the terms of their epistemic practices? What are their expectations of the different roles involved in playing in the PBL game? How do they, collectively, systematize their inquiry into the problem they have chosen to work on? The desire for the students to produce a collective narrative of their journey from a vague interest in a topic to a written report had to be balanced against the obvious risk that the participants would feel constrained by the presence of the other group members in the interview room. Normally, when conducting focus group interviews, the participants are unrelated (Lune & Berg 2017), which reduces the risk of social pressure.

Admittedly, having members of the same project group in the same room and asking them questions about their collaboration practices is not unproblematic. Students working in project groups are highly dependent on each other, and no one would be interested in causing any problems for continued collaboration. This may have led the participants to express themselves more cautiously than they would have done had they been interviewed individually. However, the last interview took place after the final exam, in other words at a point where the students were no longer constrained by any obligation towards each other.

Table 1: Participating groups and their members

Group 1	Student A (bachelor from another Danish university), Student B (bachelor from the PBL university), Student C (international student)
Group 2	Student D (international student), Student E (bachelor from another Danish university), Student F (bachelor from another Danish university), Student G (bachelor from another Danish university), Student H (bachelor from the PBL university)
Group 3	Student I (international student), Student J (international student), Student K (Danish student)

Without directly activating the theoretical vocabulary of epistemic cultures and epistemic games, the focus of the interviews was the knowledge-creation practices applied in the project work: how did the students arrive at their problem formulation, how did they experience the requirements of doing a PBL project, how did they organize the working process, how did they distribute their work, and how did they interpret advice and criticism from the supervisor and censor? The focus group interviews were recorded and transcribed verbatim. Subsequently, the transcripts were coded in NVivo using a combination of theory-generated and data-generated codes. The concepts “epistemic culture” and “epistemic game” offer an abstract terminology enabling a general analysis and discussion of knowledge practices across contexts, disciplines, and professions. Whereas the interview questions were phrased in terms normally employed in the institution’s communications on project and group work, the analysis took its point of departure in a theoretically determined understanding of the project work as an epistemic game. Thus, codes reflecting this understanding were developed. Perkins (1997) understood epistemic games as being rule-based. Markauskaite and Goodyear (2017a) built upon this understanding when defining epistemic games as involving both “rules of thought” and “rules of culture”. Thus, it was important to include codes enabling the identification of the various ways in which the students talked about PBL as based on or regulated by rules. For example, students would talk about PBL as being based on “rules of thought” when they reflected on whether they actually had taken their point of departure in a problem (as opposed to a topic). Students also characterized PBL as involving “rules of culture”. For example, they mentioned that the dimensions of the philosophy of science and methodology were emphasized much more “here” (at the PBL university) than they were used to. Theory-based codes were used in order to “open up” the analysis qua the systematization of data according to these categories. The theoretical construct of the epistemic game includes a conceptualization of how individuals normally conceive of being involved in an inquiry in a given context. They expect the inquiry to take place within certain perimeters, in other words, to be goal-oriented, structured, and regulated by certain rules (Perkins 1997; Markauskaite & Goodyear 2017a). These “game conditions” are set by the social and cultural context of the inquiry, in other words, by the epistemic culture (Knorr-Cetina 2007). Using the concepts included in the theoretical construct of the epistemic game in the analysis revealed several instances in which the students talked about PBL in a way that correlates with epistemic game

concepts (for example, when a student asked a censor, “Is this a PBL problem formulation?”). Thus, the use of codes based on the epistemic game construct was also instrumental in arriving at the finding that expectations of rules and well-defined forms and moves were not met in the feedback from supervisors and censors.

The theory-based codes were used in combination with what could be defined as in-vivo codes, concepts introduced and used frequently by the participants themselves. However, these were not concepts specific to the individual participants or groups, but concepts that figure prominently in the institutional discourse on problem-based learning, e.g. “problem”, “problem formulation”, “theory”, and “methodology”.

4. Boundary-crossing students experiencing the PBL game

The purpose of the following section is to present identified student expectations regarding PBL as an epistemic game and the identified disjunctions between these expectations and their actual experience. Subsequently, these disjunctions will be discussed vis-à-vis Savin-Baden’s notion of PBL as a “disjunction-prone” learning process and the understanding of PBL as an epistemic game (Savin-Baden 2016). The presentation of the findings follows the chronology of project work: group formation, development of problem formulation, and finally, presentation of the project at the final oral exam. Research questions 1 and 2 will be addressed in relation to the different phases of project work, whereas section 4.4 is devoted to research question 3.

4.1 Group formation, or, learning how to pick your team

For all involved project groups, insecurities about how to play the PBL game arose continuously throughout the project period. One of the challenges in terms of knowing how to play the PBL game well appeared to be knowing how to pick your team – the kinds of people you can play well with. All participants had been through an open group formation process in which they were required to present their interests while also assessing their fellow students in terms of compatibility with their interests. The individual student enters this game with the epistemic goal of establishing a social and academic frame for pursuing a more or less well-defined interest in a topic. The students are aware that their chances of achieving their epistemic goal depend on finding the “right” people. Designing the social frame that will enable a student to achieve this epistemic goal is complicated. The students describe the process as socially awkward and emotionally uncomfortable. When theorizing group relations in student groups, the emphasis has often been on social aspects. However, when listening to student reflections on the right project partner, it becomes clear that epistemic concerns are not unimportant. Factors like academic interest and level of ambition are important, as is the way students present their epistemic goals:

Student E: “some people were really passionate [...] that topic, they knew something and they could talk about it, but then the most of them were actually just sitting there and listening and saying, ‘Yeah, I am interested in the topic but [...] didn’t look into it’”.

In group formation processes, others are referred to as “people you don’t know”. Neither language nor national background was mentioned as a form of difference that mattered in students’ reflections on whether someone could be a suitable project partner. Instead, how one presents project ideas and interests is thought of as a marker of difference important to group formation. Being too passionate and knowledgeable about a specific topic apparently scares other students off:

Student F: “But I would also actually be a little bit scared, actually, if I knew that someone was so much into the topic, [...] I would say like, ‘Okay, I’ll just do what you say because

you obviously know anything, everything about this.’ So, I wouldn’t feel like she would want to compromise with me”.

Another student points out that it might be a strategic advantage to pick someone who had already done a significant amount of work on a topic before the group formation. However, knowledgeable students might not want to share their insights with others: “it’s super complicated because this person just doesn’t want to share anything or like, then that you feel like, ‘Oh, I’m just like, pushing this person back”” (Student G).

Knowing too much (or too little) seems to be one of the markers of suitability as a project partner. “Knowing too much” signals a lack of flexibility and a prioritization of academic interests over interest in people. The uncertainty around how to pick one’s team caused one of the participants to refer to group formation as a “gamble”: “I mean I think there’s always a little bit of a gamble when you pick someone you never worked with before, but, yeah, so thankfully there was no problems”. Students are acutely aware that picking one’s team is an essential part of reaching the epistemic goal of PBL. Positive social relations are described as beneficial to academic results. However, there are several references in the material to “friendship groups”, in other words, groups in which students base their project work on existing friendship relations instead of an interest in a topic and a more professional approach to the selection of project partners (level of ambition, level of commitment, sense of responsibility, etc.). Stories about friendship groups are all examples of how project collaboration based on an existing friendship went wrong and led to poor academic results.

4.2 Learning through design: which rules apply when designing the problem?

One of the basic rules of the epistemic game of PBL is that the problem defines and governs the inquiry. All steps undertaken in terms of establishing a theoretical underpinning or conducting empirical research have to be justified in relation to the problem. Hence, phrasing the right problem is the most important *design decision* that students make. Students are supposed to make this design decision independently within the group but supported by their supervisor. Granting students the freedom to make their own decision regarding the problem formulation is in accordance with the learning goal of “responsibility for one’s own learning” or “learning through design of inquiry,” as Markauskaite and Goodyear phrase it. Only by leaving this design decision to the students can the goal of teaching students to see the link between the problem formulation, selected theories and methods, and the final result be achieved. “Learning through design of inquiry” is a difficult learning goal to achieve because it requires the teacher (as supervisor) to operate in a non-interventionist mode that may be interpreted as a lack of engagement or responsibility, especially by students who are unfamiliar with the PBL approach (Gram & Jæger 2013).

Despite the fact that students are given the freedom to phrase the problem themselves, students refer to this decision as being regulated by rules in the sense that there are “strict” principles when it comes to defining what constitutes a problem. Thus, understanding the nature of a real problem is something that is expected to distinguish old-timers from newcomers. Students who did their undergraduate studies at the PBL university are supposed to know what characterizes a PBL problem formulation. Students coming from other universities find it difficult to discuss and decide on the problem formulation:

Student A [student with a bachelor’s degree from a non-PBL university]: I think it was, it was a little bit annoying for a while, because I’m not used to it being so strict in a way, I don’t know if that makes sense but, yeah, I’m not used to, I think we were trying to reword the problem formulation at one point, and I said, ‘Let’s just do this, it’s fine and just keep moving’, like, ‘Let’s move on’, and [name of student B] pointed out that, ‘No, because then it’s not a problem anymore’, and I was like, ‘Okay, does that matter?’ ‘Yeah, because

it's PBL'.

Student C [international student]: Yeah, it was difficult to, like, find a problem, like, and then discuss, 'Is this a problem?' Like, the whole problem formulation, the first time was very difficult.

Student A, who was unfamiliar with the PBL approach, referred to working in a problem-based way as using a specific lens vis-à-vis academic content:

I think that I will have to put on the PBL glasses again... yeah, because I'm still not totally used to it, I've just worked with one project, so next semester I will probably learn again in a new way.

These quotes demonstrate that students categorize themselves and others according to their mastery of the PBL game. Student A (the inexperienced student) still refers to herself as a beginner – “I'm still not totally used to it” – and she is also prepared for the possibility that the next project will require her to expand her PBL knowledge and skills through learning “in a new way”. Despite the fact that students understand problem formulation as something that can be done in a right or wrong way, and as such as regulated by a combination of written and unwritten rules, students still experience that the rules and criteria are contestable to a point where the value of prior knowledge may be outright rejected. Students ask for guidance (for example, Student B asked a censor, “Is this a PBL problem formulation?”), but do not receive direct or unambiguous answers.

Another example illustrates how a group finally settled on a problem formulation after having worked on one for at least two weeks. The selected problem formulation was subsequently criticized by the examiners during the oral exam on the project. Apparently, the problem formulation used in the project had been accepted or at least not rejected by their supervisor. The process left the students in a state of confusion. In their work arriving at the proper problem formulation, they understood that a certain set of criteria or rules applied, which had resulted in the disapproval of numerous suggestions by their supervisor. However, when discussing the problem formulation in the exam, additional criteria emerged:

Student D: Well, what I think was maybe, like, the obvious problem we were facing through the whole process was our problem formulation and I feel, because now that was another topic in the oral exam, which was fine, but it appeared that the problem formulation had some, yeah, some issues, not really error.

Student E: There wasn't a clear link between what we meant about two terms.

Student D: Exactly, yeah, but that was very strange I thought because we were intensively working with her and then it's a bit contradicting I think, because, I mean, she is also our supervisor, I don't say that she should do it for us or anything, that ask questions about it she should, but maybe then tell us already beforehand if it's really vague or so, which she did before with the other problem formulations, then why not now again?

Students are given the freedom to design their inquiry by phrasing the problem guiding their work. When doing this, they assume that they are playing a well-defined epistemic game in the sense that they expect certain rules to apply, certain forms to be preferred, and certain moves to be expected in the pursuit of the epistemic goal of accomplished problem-based learning. Newcomers assume that

supervisors and PBL old-timers know and understand the rules (e.g. in the form of explicit assessment criteria and in the form of explicit acceptability criteria regarding the problem formulation), moves (e.g. in relation to exam performance), and forms (e.g. the form of the problem formulation). However, the concrete experience is that knowledge of what a proper problem formulation is supposed to look like is contested and changing.

4.3 Which game are we playing? Insecurities regarding the epistemic game

As indicated above, new students expect to learn the epistemic game of PBL. They look for guidance from teachers and PBL-experienced students. Based on the statements made in the group interviews, students clearly search for something that would fulfil the criteria of an epistemic game. They look for rules in the form of clear assessment criteria. They look for recommendations and guidelines regarding formats for problem formulations, methodology chapters, and performance at oral exams. On the one hand, students expect the PBL game to be a well-defined epistemic game that they eventually will come to master. On the other hand, they also state that the correct way to play the PBL game is dependent on the supervisor and the censor.

Student E: I think it's difficult to prepare for exams because they are all different from each other and depending on the supervisor and the censor and who you are as a student, so, I don't know.

Student D: It's also based on what kind of supervisor and censor you have, but also the feedback, like now the feedback that we got about this one, feedback that - we already talked about it - for instance, color coding our transcriptions but that doesn't mean that the next time with a different supervisor or a censor, maybe the feedback will be, 'Why, I didn't want the color coding in there,' so there must be some kind of general consensus somewhere in order to avoid that, but I think there is none.

Student K: Yeah, because it can go in so many ways, I mean, they can go in-depth, like, with the program, or the report, that's also, I mean, they could, you know, ask like, whatever they want.

Based on the students' statements on the confusion that feedback from supervisors and censors generates, students do not find a unified, consistent response on how to play the PBL game in their interactions with supervisors and censors. Instead, they find that each supervisor and censor seems to suggest a different game that the students need to learn in order to do well. However, across all interviews, certain elements seem to have been points of contention between supervisors and students (although the students all express satisfaction with their supervisors at a general level): the problem formulation, the methodology, the understanding of the philosophy of science, and the concept of PBL itself:

Student D (international student): For me [...] it has nothing to do with the multinational group, it's more the thing itself, like, working on PBL, maybe, because I have never heard like, or I just recently learned it, like, all about constructionism and hermeneutics and I'm still super confused about it and I don't feel like that I have the knowledge actually going into an exam with that or having the overall knowledge that I could say, 'My research fits into this perspective', because, yeah, I feel like I'm, like, only have like superficial knowledge about it and don't know the deeper sense of it, how to do research, but I feel like it's, here at least, that that thing must be super important, how to address it, and I

would, I don't know, feel like I'm missing a whole study on that right now.

Interviewer: Would you say that it was both the behavior of the censor and the supervisor that was confusing to you, or was it just the situation itself?

Student J: I think the censor [...] when he started to ask about the ontology and epistemology.

The epistemic objects that frequently turn into points of contention indicate that supervisors and censors might be emphasizing students' ability to make responsible choices and expecting them to be able to design their own epistemic game. The problem formulation and the chosen methodological and epistemological approaches all represent "fork-in-the-road" points where students need to make decisions of crucial importance for their epistemic goal. Thus, if teachers expect students to play a second-order epistemic game, which Markauskaite and Goodyear (2017b) refer to as *learning by designing inquiry*, these are the points where teachers would require students to be able to decide for themselves which moves they need to make and which rules they need to follow.

4.4 Consequences for boundary-crossing students

The study took its point of departure in an interest in boundary-crossing students and their encounter with a PBL university – in other words, with PBL as an overarching epistemic game. Being newly enrolled in a university always generates a certain level of culture shock, and a large body of literature addresses international students' adaptation to the study abroad context. At the PBL university, the PBL pedagogy figures prominently among the factors that students refer to when they describe what is unfamiliar and different at their new university. Students do not refer to national or cultural differences but state that things are done differently because of the PBL approach of the university. As Student D (an international student) clearly states, the confusion and alienation that she felt in relation to her project exam "has nothing to do with the multinational group" but rather with the PBL approach itself.

Boundary-crossing students often refer to themselves as novices in terms of PBL ("I am not totally used to it"; "the conversation [in the exam] was a new thing to me"). Experiences that deviate from previous academic experiences are interpreted as somehow being related to the PBL approach. PBL becomes a framework in which everything that is unfamiliar and difficult to understand, ranging from the strictness of problem formulations to contact with supervisors and the heightened emphasis on methodology and the philosophy of science, can be placed. The notion of a relatively consequential shift and emphasis on PBL as a distinct and different epistemic game is co-constructed by PBL-experienced students, supervisors, and censors. The interviewees did not at any point stress the similarity of the PBL university to their home universities. Instead, the differences were emphasized. For the organization as well as its members, the PBL approach seems to function as a marker of an identity boundary (Santos & Eisenhardt 2005). Following Santos and Eisenhardt, this suggests that PBL helps the organization communicate (and maintain) the difference between insiders and outsiders, and what distinguishes the organization from others.

There seems to be a connection between the recurrent invocation of PBL as an organizational identity marker and the incoming students' experience of being in unfamiliar territory. The data contains multiple examples of how new students encounter a breach between their prior knowledge and what they understand as PBL principles. Most dramatically perhaps is when a student is told to "forget" prior knowledge in favor of a specific PBL approach, but also when students articulate their surprise regarding supervisors' and censors' prioritization of the methodology, philosophy of science, and PBL approach over the project's actual theoretical and empirical content. One (international) student understands this to be a local/university-specific focus: "I feel like it's, here at least, that that

thing must be super important” (Student D). “I am more used to questions about the analysis, that’s usually the most important part” (Student A, a bachelor from a Danish non-PBL university).

5. Discussion and concluding remarks

Universities play a key role among the institutions constituting macro-epistemic arrangements (Knorr-Cetina 2007), the institutional arrangements securing the production, monitoring and approval of true knowledge. Within macro-epistemic arrangements, myriads of local and global epistemic cultures “creating and warranting knowledge” exist. Knowledge is constantly produced, challenged, confirmed, and applied through inquiries or so-called epistemic games. If inquiries do not produce knowledge through the epistemic games accepted in specific epistemic cultures, the produced knowledge cannot be said to be “warranted” in the sense suggested by Knorr-Cetina. Mastering the epistemic games constitutive of specific epistemic cultures is a prerequisite for being considered a competent inquirer and member of the culture. Hence, prospective inquirers (e.g. students) strive to master the culture’s epistemic rules and moves and the accepted forms of knowledge representation, and pursue goals that are considered valuable within that culture.

As argued above, at universities founded on PBL pedagogy, PBL is presented as an overarching epistemic game. Through the practice of PBL, students are expected to expand the knowledge base of their fields (propositional games), solve problems (problem-solving games), and even engage in self-directed learning while addressing authentic or wicked problems that require them to engage in learning through designing their own inquiry. The literature emphasizes that such conditions create a challenging learning environment for students. Students inevitably encounter periods where they feel “stuck in learning”, as Savin-Baden puts it. She also warns, “PBL is a process, practice and pedagogy in which students experience disjunction” (Savin-Baden 2016: 5). Feeling stuck and experiencing disjunction are, from a PBL perspective, seen as valuable opportunities for learning. Thus, tutors and supervisors are not supposed to point to solutions in order to remedy students’ discomforting feelings. Instead, students need to develop their own strategies to get past situations in which they feel stuck. Often, however, tutors will intervene in order to help students get past states of being stuck (Jacobsen 2004).

Being stuck in a learning process happens in most learning contexts. Meyer and Land were among the first to use the notion of “threshold” concepts to identify the concepts that typically cause students to be “stuck” in their learning within a given discipline. These are concepts that are difficult for students to understand and difficult for teachers to teach. However, once these concepts are understood, they open up new spaces of understanding and even change the understanding of previous knowledge. In other words, threshold concepts can be characterized as *transformative*, *irreversible*, *integrative*, and sometimes *troublesome* (Meyer & Land 2005: 373). Meyer and Land (2005) argue that such concepts can be defined within individual disciplines because the same concept is likely to have the same effect and importance for most students studying that discipline (e.g. the notion of opportunity cost in economics). PBL scholars have recognized the relevance of the notion of the threshold concept in explaining bumps in the road of student learning. However, in PBL, students work on interdisciplinarily defined problems, and their learning is assumed to be self-directed. What will appear as threshold concepts cannot be defined a priori or within a single discipline. This has led some scholars to coin the term “transdisciplinary threshold concepts” (Barrett 2013; Savin-Baden 2016). Barrett based her choice of transdisciplinary threshold concepts on empirical studies, and Savin-Baden’s conceptualization rests on a literature study. What constitutes a meaningful threshold concept seems to depend to some extent on the context and the purpose of the study. In the present study, “problem formulation”, “methodology”, and “philosophy of science” emerged as threshold concepts that, at the time of the last round of the interviews, caused a state of being stuck and the uncomfortable feeling of being confused. The sense of being stuck does not concern the learning of the disciplinary and interdisciplinarily knowledge presented in the projects. Instead, being stuck relates

to learning PBL. Thus, it is argued that problem formulation, methodology, and philosophy of science emerge as threshold concepts for the goal of learning PBL as an epistemic game, specifically the game of learning through the design of inquiry.

The study departed from a specific interest in students coming from non-PBL educational backgrounds. The study intended to investigate differences in the perception of PBL between PBL-experienced and inexperienced students in order to understand the challenges involved in crossing university boundaries. However, the study found that both PBL-experienced and inexperienced students could find themselves in a state of being stuck in their PBL learning. Students with a non-PBL background explain this experience with the fact that they are PBL novices, but none of the students feel confident that they have now mastered the PBL game. Feelings of confusion and insecurity and of being stuck are first and foremost related to the exam situation.

The notion of epistemic games is helpful in explaining the students' feeling of being stuck on their path to learning PBL. To put it more simply, students expect to play a different kind of game. They conceive of PBL as a well-defined, rule-based game involving certain preferred practices and presentation formats and pursuing specific goals. Based on the questions that the students ask (e.g. "Is this a PBL problem formulation?"), students expect to be integrated into a social practice in which masters of PBL as an epistemic game will introduce them to the rules of the game. In contrast to these expectations, they are confronted with institutional and pedagogic demands that they learn to devise their own game by crafting a productive problem formulation, choosing adequate methods, and understanding the affordances and limitations of theories, methods, and knowledge produced. These demands are likely to be different from prior experience, for example in high school or at non-PBL universities, and thus students clearly experience boundary-crossing as consequential.

Well-defined, rule-based epistemic games are played in most educational institutions both in the field of secondary education and in higher education. Without applying the vocabulary of epistemic games, Jacobsen (2004) illustrates how students and tutors in what is supposed to be a PBL setting become involved in this type of epistemic game. In accordance with PBL principles, the student group is presented with an openly defined situation in the form of a description of a set of medical symptoms. In the PBL tutorial, they are supposed to use their medical knowledge to provide a diagnosis of the patient's condition. Jacobsen's study illustrates how the tutor steers the deliberation process towards a specific solution, and the game for the students thus becomes one of interpreting the cues provided by the tutor and guessing the solution based on these cues and on cues provided in the text. Such games bear little resemblance to the complexity represented by real cases and illustrate the importance of encouraging students to go through the process of systematizing complex and perhaps even contradictory knowledge into a problem formulation of their own making. However, Jacobsen's case study reflects the same type of cue searching and interpretation game in which students seem to be involved in the present study.

Barrett (2013) argues that well-designed problems provoke students to go beyond what is already known and engage knowledge beyond the threshold. The literature drawing on the notion of threshold concepts conceives of the space beyond the genuine engagement of threshold concepts as a "liminal space" (Land & Meyer 2006; Savin-Baden 2016; Barrett 2013). It is understood as a space "betwixt and between spaces" because it is the space of transition from old to new understandings, identities, and modes of acting. In the liminal space, the learner may anticipate new understandings but could also "regress" to previously held ideas. However, former ideas are seen in a new perspective, and because passing the threshold is believed to be an irreversible act, learners are not able to return to the state they were in before entering the liminal space (Savin-Baden 2016). Based on the findings reported above, the interviewed students seem to find themselves in the borderland that is referred to as a state of liminality. They articulate a growing realization that they will not be taught well-defined PBL rules or unambiguous formats and standards. Instead, they are met with questions regarding their own choices. This realization is surely troublesome knowledge (Savin-

Baden 2016). The epistemic game approach suggests that beyond the relative safety of playing well-known epistemic games, players of epistemic games will be expected to design their own game – especially if they intend to engage authentic, socially relevant and therefore wicked problems. In PBL-organized students, this seems to be what waits beyond the space of liminality.

The findings of the study beg the question: should institutions and individual teachers do more to accommodate students' call for rigorous and unambiguous guidelines on how "to do PBL"? Would clear guidelines on how to write good problem formulations and make the right methodological choices remove students' experience of confusion and uncertainty? Such guidelines obviously exist (e.g. Bitsch Olsen & Pedersen 1999; Dahl 2010) and are often included in introductory classes on PBL. However, the parts of the PBL literature that recognize the often agonizing and frustrating phases of liminality in project work do not suggest that students should seek to avoid these phases. On the contrary, such phases are seen as integral to the PBL process itself. Thus, it is the job of the supervisor or tutor to challenge students to such an extent that the students are forced to go through the transition process referred to as liminality (Barrett 2013). Barrett (2013) depicts this transitional learning process as a triangle involving engagement of the field's threshold concepts, personal identity development, and finally, a changed capacity for professional action. As Barrett points out, the professional action dimension may take many forms depending on the educational context of the PBL learner. Still, the insight that active engagement and the internalization of the intellectually challenging parts of one's field or discipline and identity change go hand in hand applies to all higher education learning contexts. Thus, a desirable outcome of transitional PBL learning processes is that students develop confident identities as problem-oriented academics and professionals who are able to make well-founded and reflective choices that can be defended in today's complex and ambiguous working contexts. As Barrett points out:

It is also about being able to define the kernel of a problem and being able to stand over this professional judgment. In professional practice other professionals may agree or disagree with their definition of the problem and clients/service users/students may also agree or disagree with that decision or may seek a second professional judgment elsewhere. For there are many and competing theories in each discipline. [...] It is vital that students are able to ask themselves the following questions: Where do I situate myself? Why? How do I define the problem?" (Barrett 2013: 530).

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