Analysing learning designs of 'learning through practice' as Networked Learning

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Abstract

Our aim in this paper is to analyse a set of well-known pedagogical approaches based on 'learning through practice' by viewing them as forms of networked learning. Following earlier work by the second author, we understand networked learning as learners' connecting of contexts in which they participate and as their resituation of knowledge, perspectives, and ways of acting across these contexts (Dohn, 2014). Learning designs of 'learning through practice' are distinguished by engaging practices outside the formal educational system as ways of developing curricular understanding and, reciprocally, as providing grounds for concretisation of curricular content through its enactment in practice. By viewing these learning designs as networked learning we highlight their potential for supporting certain connection forms between learners' experiences in target practice and educational practice. In particular, we look at the learning designs of 1) case-based learning, 2) design-based learning, and 3) simulation-based learning. We understand a learning design in accordance with Mor, Mellar, Warburton, & Winters (2014) as an educational pattern that supports specific actions in typical situations and, in compact form, collects the central part of a practice that can be communicated to others (2014). We understand a learning design to have four primary dimensions: 1) purpose, 2) content, 3) methods, and 4) underlying learning-theoretical basis. The four dimensions reflect basic functions of an educational practice: its purpose (its why), its content (its what), its method (its how), and its theoretical basis (its reason for the why, what and how). We argue that case-based learning establishes a relationship of inquiry between learner and target practice with the aim to support the learners in gaining understanding through participating in a sense-making process. The relationship established in design-based learning is one of innovation with the aim to support learners in developing understanding of practice through changing it. Finally, in simulation-based learning, relationships of imitation of target practice and engagement in 'as-if' practice are established with the aim of supporting learners in developing situated skills and knowledge.

Keywords

Networked learning, learning design, case-based learning, design-based learning, simulation-based learning, connections between contexts

Introduction: clarifying central terms

In the 20 years that have passed since the first Networked Learning Conference, the field has evolved as different understandings have emerged of what constitutes nodes and edges in the 'network' and how the 'network' may be supportive of learning. In the concluding chapter of the edited collection of papers from the 2016 conference, the editors thus identify five different understandings of 'networked learning' represented in the chapters of the book (Dohn, Sime, Cranmer, Ryberg, & De Laat, 2018, in press). They stress an underlying agreement on a basic socio-culturally inspired view of learning and a corresponding focus on persons learning rather than on technology. They also stress, however, that the different understandings accord diverging roles to other people in the 'networked learning' process; that there is no unanimity in viewing the connections between nodes as necessarily mediated by ICT; and that the nodes need not be made up of people. Instead, nodes may consist more broadly in 'actants' (i.e. both human and non-human entities) as in actor-network theory or they may be made up of contexts, the connecting of which enables the learner to draw on knowledge from familiar settings in new ones. This latter view has been propounded by the second author in Dohn (2014) with the argument that 'networked learning', understood as the connecting of contexts, may support learners in drawing on tacit semantic content from known situations to make 'deeper' sense of propositional knowledge in new ones. Designing for networked learning on this view is designing for learners' coupling of contexts, and in particular designing for them to significantly draw on their tacit knowledge, perspectives, and ways of acting from other

familiar contexts in the sense they make of current ones. This may be done utilizing ICT to support the coupling of contexts, but physical artefacts, sensuous stimulation or enactment of participation practices from other contexts may also facilitate learners in establishing relevant connections to other contexts.

In this paper, we take this latter approach to networked learning. Our aim is to take a fresh look at a set of well-known pedagogical approaches which are distinguished by engaging practices outside the formal educational system. They may all be viewed as ways of 'learning through practice' with the dual focus of developing curricular understanding through the engagement of content from the 'outside practices' within the education and, reciprocally, as providing grounds for concretisation of curricular content through its enactment in practice. In particular, we look at the learning designs of 1) case-based learning, 2) design-based learning, and 3) simulation-based learning. We understand a learning design in accordance with Mor, Mellar, Warburton, & Winters (2014) as an educational pattern or pedagogical scenario that supports specific actions in typical situations and, in compact form, collects the central part of a practice that can be communicated to others (2014). A learning design thus relates to typical (but still changeable) actions performed by social actors in certain situations. Thus, a learning design helps to stage educational actions and forms a response to situations and challenges in an educational context. We understand a learning design to have four primary dimensions: 1) purpose, 2) content, 3) methods, and 4) underlying learning-theoretical basis. The four dimensions reflect basic aspects of an educational practice: its purpose (its why), its content (its what), its method (its how), and its theoretical basis (its reason for the why, what and how) (Hansen & Dohn, 2017). The theoretical basis should explain how the use of the content and methods in question can lead to learning of the desired kind for the learners. A learning design indicates whether and how a particular learning activity may be enacted within a context Given our view of networked learning, new questions arise for the three learning designs concerning the way they couple between practice contexts inside and outside of the educational system and the connections drawn between these contexts. These connections need to be re-conceptualised, in particular as concerns how they support learners in developing and resituating content across these contexts. Through an analysis of these issues, we shall be able to identify the connection forms which each learning design supports between learners' experiences in target practice and educational practice. Our research questions for this paper thus are

RQ: For each of the three learning designs: Given the lens of networked learning, understood as learners' connecting of contexts in which they participate and as their resituation of knowledge, perspectives, and ways of acting across these contexts (henceforth: the lens of NL),

- how can the purpose of the learning design be reconceptualised and which kinds of connections are stimulated between educational practice and the target practice?
- which kinds of content are in focus in the target practice and the educational practice, respectively; how does the content resituate between the practices; and which kinds of connections between the contexts does this help learners form?
- how can the methods by which learners form connections and resituate content across the practices be reconceptualised?
- how can the underlying theoretical underpinning of the learning design be reconceptualised in terms of networked learning?

In the following, we understand 'practice' and 'practices' at two levels, corresponding to the level of the activity itself (narrow sense) and the overall setting in which activities take place (broad sense) (cf. Dohn, 2005; Dohn, 2007):

1 Micro-level of action: Human activity of some regularity, i.e. a bodily-mental engagement with the social and material environment where it is possible to discern between the (more or less) adequate and the (more or less) inadequate
2 Meso-level of action: The sense-bearing context(s) within which human activity (micro-level) takes place.

With the term 'target practice', we refer to the practice (at both levels) outside of the educational system, which the learning design engages and aims at. The target practice may be a specific workplace or type of professional setting (both meso-level) or it may be an activity within the workplace or professional setting such as the writing of a report for one's employer or the teaching of genre theory to a fifth grade (both micro-level). The point of the approach to networked learning to which we adhere in this paper is that engaging in activities (micro-level) within sense-bearing contexts (meso-level) will supply the learner with tacit experience which may be drawn upon in new contexts. This is so, both at the concrete level of doing the activities, and at the overall level of the sense and value accorded to the activity within the sense-bearing context.

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The three learning designs of 'learning through practice' are characterized by different kinds of learner-practice interactions and reflect different forms of participation in educational practice. They also facilitate the development of different forms of knowledge. Further, they reflect different approaches to practice: Practice as a phenomenon which the learner can make an inquiry of (case based learning); practice as the locus of problems for which solutions may be developed (design based learning); and practice as a phenomenon to be imitated in a simulated environment (simulation-based learning). The latter approach is closely related to Laurillards understanding of learning through practice as a "way of enabling the learner to understand and use the knowledge and skills of a discipline. It is sometimes referred to as "learning by doing", or "learning through experience", where the learner adapts their actions to the task goal, and uses the result to improve, without teacher intervention." (Laurillard, 2012, p. 162).

Case-based learning analysed as Networked Learning

The purpose of working with case-based learning is to develop understanding through inquiry and hereby engage learners in active and reflective participation in a sense-making process. Case-based learning is thus based on a learner-centered inquiry approach also involved in the Problem Based Learning (PBL) (Savery, 2015). However, essential to PBL is investigation of problems with the aim of solving them. In contrast, case-based learning does not necessarily involve problem solving, but focuses on developing an understanding of the case with its possibilities, challenges and dilemmas. Cases may be used to support different objectives and may involve different kinds of content and methods. One way is to use cases as pedagogical examples of academic knowledge concerning concepts, principles and theory. This potentially gives learners a richer understanding of e.g. an abstract concept. Another way to use cases is as tasks where learners are asked to apply a theoretical approach, e.g. organizational analysis, in order to develop certain analytical skills. A third way is to provide detailed descriptions rich in contextual information (what Geertz would call "thick descriptions" (Geertz, 1994) of cases from target practices. The learner is then challenged to make sense of the thickly described situation and thereby to theoretically "deal with the complexity of workplace situation" (Jonassen & Hernandez-Serrano, 2002, p. 68). A fourth way to use cases is for the learners themselves to undertake an inquiry of situations in target practice outside of education. In this last use, the case will not be decontextualized or well-structured but will involve experiences of an everyday professional context. This may stimulate learners' situational awareness. Case-based learning of this latter kind is based on the methods of a case study, which Yin defines as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 2003, p. 13). Typical methodological features of a case study are that it calls for an in-depth focus on a specific unit of analysis that occurs in a natural setting. The investigation of the unit of analysis is based on multiple data sources and is described with highly contextual details (VanWynsberghe & Khan, 2007).

Working with the different kinds of case-based learning has the potential of informing learners about a practice they do not have experience with. At the same time, cases may help learners recall their own experience of similar situations. Cases can therefore forge connections between learners' own experiences in other contexts and the curricular content, allowing learners to develop an understanding of the experiences through the lenses of the academic field.

In terms of philosophy of science, the approach of case-based learning is hermeneutic, since the basic purpose is to gain an understanding of the practice, both at the micro- and at the meso-level. 'Hermeneutic' may here be understood in the classical methodological sense from Schleiermacher (1959) and Dilthey (1927) of simultaneously letting individual data and overall understanding of the practice inform each other. Each new piece of information is interpreted in the light of one's overall understanding, and, conversely, the overall understanding is adjusted along the way, as new information becomes available. Learning-theoretically, this methodological view aligns with a basic constructivist approach of 'knowledge building' through assimilation of new input, and accommodation of the overall scheme/knowledge structure, as recalcitrant input is encountered. 'Hermeneutic' may, however, also be understood in the ontological sense from Gadamer (1990) that an essential characteristic of us as humans is that we are interpretive beings: We are always already in an understanding of the world and practice will open to us as meaningful on the basis of our Vorgriff ("pregrasp") and Vorurteile ("prejudices" - to be understood positively as the necessary condition for there to be understanding at all). Developing an understanding of practice engages our interpretive being in the 'fusion of horizons' between the horizon of our pregrasp and the horizon of the practice. Learning-theoretically, this view lends itself rather to a sociocultural view in line with e.g. Säljö's version of activity-theory (Säljö, 2000). On this view, the use of cases will allow us access to the same overall socio-cultural world as the practice we seek to understand. This will

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supply an initial grasp, to be developed as we get familiar with the more specific activities undertaken (micro-level) within the sense-bearing contexts (meso-level).

Viewed more specifically through the lens of NL, the basic characteristic of case-based learning is that it potentially allows the learners to interpret the academic concepts and theories which they work with in their education with the concrete experiential sense of the target practice. This will be supported best in the type of case use where learners engage in inquiry in target practice and thus form their own experiences of this practice. The other three kinds of case use will depend on learners' vicariously imagining practice experiences based on descriptions and/or on them recalling experiences from other situations. For these kinds of case use, the classical methodological rendering of case-based learning seems the appropriate one. However, for case-based learning as inquiry-in-target-practice, the Gadamerian ontological rendering of case-based learning appears most pertinent: It is through engagement of one's own interpretive being that the learners are able to draw the connections that they do, including making initial sense of the target practice through their more general background understanding of this kind of socio-cultural practice. Immersing themselves in the target practice for extended study in the natural setting will provide learners with at least some experiential knowledge, if not of the undertaking of the activities themselves (which the learners perhaps only observe), then of the way the activities play out materially and in social interaction when they are undertaken by others. This experiential knowledge will supply concrete sense to what participants say about their practice. The concrete sense can then resonate in the learners' understanding of the participants' words, and help them develop an adequate contextual perspective on what goes on in practice. Traversing back into the academic setting, e.g. to write a report of the case-based learning, the experiential knowledge and the contextual perspective may provide concretized sense to the academic theories. When this happens, it will allow the learners a fuller understanding of the theories because they resonate with tacit practice meaning. There is, however, no automaticity or necessity in this - learners may fail to 'see the connection'. This is due to the fact that dealing with academic theories within education is itself a practice. Therefore, the experiential knowledge and contextual perspective of the target practice have to be resituated to 'fit' into the report, rather than seem like a somewhat out-of-place anecdote - or an altogether unrelated matter. The problem is amplified by the fact that others will not have the same experiential sense to draw on in their understanding of what the learner writes in the report. It may also be amplified by the fact that unless learners are allowed to engage in the actual doing of the activities themselves, the tacit knowledge that they develop will be limited and somewhat vicarious. To the extent that it is, it will not be essential for sense-making for the learners and thus will not 'spring to mind' with the same readiness as experiential knowledge does which has been developed in contexts with which they are actively and emotionally engaged (their "primary contexts", cf. Dohn (2014))

Design-based learning analysed as Networked Learning

The purpose of design-based learning is twofold: to innovate practice and to gain understanding of practice through the process of changing it. Design-based learning builds upon the thesis that there is a strong connection between design and learning.

The basic method in design-based learning is the design experiment (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003; Collins, 1992). A design experiment on the one hand reflects an existing practice with its problems and challenges and on the other hand the innovation of this practice through the design experiment. This two-pronged approach to practice focuses the content of design-based learning. The design experiment is both a process of learning and of problem solving and will typically include several stages such as: defining the problem and identifying the need; collecting information; introducing alternative solutions; choosing the optimal solution; designing and construction a prototype; and evaluation. This is an experimental way of working where the learner in working with alternative solutions has a role as a "*bricoleur*" (Gravemeijer & Cobb, 2006, p. 51), who uses the available materials to invent new applications. This process involves the learner in investigating the target practice as well as in developing and negotiating prototypes in collaboration with practitioners. Design-based learning shares basic characteristics with Design Based Research, in that learners should address: "…complex problems in real contexts in collaboration with practitioners; integrating known and hypothetical design principles with technological advances to render plausible solutions to these complex problems; and conducting rigorous and reflective inquiry to test and refine innovative learning environments as well as to define new design principles" (Reeves, 2006, p. 58). That is, like Design Based Research, design-based learning is *pragmatic* with the goal to solve real-world problems. It is *grounded* in both theory and real-world context and utilizes an *iterative and flexible process* of investigation based on collaboration between researchers and practitioners. It integrates a *variety of research methods* and data sources. Finally, the results of

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the learning process are connected both with the setting where the investigation is conducted and with the use in new settings, as is the case in Design Based Research (Wang & Hannafin, 2005, p. 7).

There are several possible theoretical underpinnings to the aim of design-based learning, i.e. to gain understanding of practice through changing it. A set of these underpinnings take their outset in the constructionist claim that (only) by building something do you understand it. This claim is then further justified in different ways: One rationalisation would build on Papert's Piaget-inspired view, according to which constructing something in the physical or virtual world is paralleled and enabled by a corresponding construction of mental schemas. These schemas are then challenged if the physical/virtual construction does not behave as expected (Papert, 1993). Another version is a variant of diSessa's point that by taking something apart and rebuilding it, you develop an understanding of the mechanisms by which it works (diSessa, 2000). This can, again, be explained in terms of Piagetian/Papertian mental constructions, but other conceptualisations of what is involved in 'understanding the mechanisms' are possible as well. On the other hand, the dictum often attributed to Lewin that 'if you want to truly understand something try to change it' signals a rather different way of justifying the aim, especially given Lewin's gestaltist approach to understanding organisations and social groups (Lewin, 1973): Systemic affordances and constraints that are not initially evident, including forces of social interaction, contextual requirements and invisible barriers and constraints, become apparent as they effect resistance to change. The point is thus not only the cognitive one of the constructionists to 'understand a given phenomenon through building it' but just as much the determination itself of what the phenomenon is, through disclosing its outline in the concealed factors identified in resistance. Yet another way of justifying the claim would be from the perspective of situated learning, according to which practice has its concrete meaning in participation. On this perspective, engaging as a participant in practice will necessarily imply changes - for the learner and for the practice - because participation always is a negotiation of positions and appropriate actions. The situated learning justification would, however, focus less on the intentional employment of design and change, and more on the actual changes that come about as a result of participation.

Through the lens of NL, the basic characteristic of design-based learning is the possibility it offers learners to 1) actually engage in the target practice and develop experiential knowledge and contextual perspectives in the course of this engagement, and 2) to engage in imaginative processes of designing for an anticipated future practice. Further, these experiences are not just vicarious, based on observation of and dialogue with participants. Instead they are embodied, lived understandings of practice meanings. From this perspective, the situated learning rationalisation, coupled with the Lewinian insight that designing for change will bring forth hidden aspects, are more adequate learning-theoretical underpinnings of design-based learning than constructionism. Being engaged themselves in the practice, rather than seeking as outsiders to understand it, all things equal will be more supportive of learners' developing commitment to and emotional involvement in the practice. The practice may even over time become to some degree "primary contexts" for the learners. To the extent that it does, the experiential knowledge developed will be available much more readily as tacit semantic content to draw on for the learners in other contexts, too, though prompting, facilitation and scaffolding may still be needed. In particular, it may more easily inform their understanding of academic concepts and theories within educational contexts. Similarly, the contextual perspective of the target practice may supply a concretisation - and thus a way in - to academic texts. However, there remains the question of what practice positions learners are negotiated to have in the target practice; which activities they actually are allowed to undertake; and in what participatory roles. Will they be expected to participate alongside participants, partaking in the practice activities, performing participant actions, as they negotiate the design and its realisation? Or will they only be allowed to supply ideas - perhaps in the form of a design developed on beforehand - and perhaps counselling on their implementation? How these questions are answered in the design-based learning project is decisive for which experiential knowledge and contextual perspectives the learners are de facto able to develop. If they are accorded a position more as commentator and counsellor and less as practitioner, the embodied understanding developed will only to a lesser degree be able to 'fill out' academic theories and concepts with action practice meaning. Equally, there is the risk that learners' involvement in the target practice happens at the expense of their engagement in their education. This may lead to the latter losing (or never gaining, as the case may be) significance as "primary context". In turn, this may make it more difficult for learners to 'traverse back' and resituate their experiential practice knowledge in concretised sense-making of academic perspectives.

Simulation-based learning analysed as Networked Learning

Simulation may be defined as tasks within the educational setting which mimick tasks in the work situations of target practice. Such tasks are common in learning designs in professional disciplines as health, medicine, and engineering education (Laurillard, 2012, p. 180). The purpose is to 'learn to do practice'. More specifically, the

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purpose is to develop complex skills and to reflect on action. This is done by involving learners in realistic scenarios from the target practice. Simulation can be used to simulate workplace dynamics and can support the learners' future on-the-job-experience and point to "…the essential dynamics of a workplace in a way that allows learners to explore different approaches, test diverse strategies, experience various outcomes, and build a better overall understanding of key aspects of the real world" (Shapira-Lishchinsky, 2015, p. 3). Simulation is an activity supporting learners in learning important target practice skills. However, it is also important for learners to step out of the simulation and reflect on their problem solving and on the skills learnt. In a further perspective, learners should also be supported in reflecting on the workplace identity which they engage in the simulation and on its relation to their own identity as future practitioners. Simulation-based learning therefore involves two connected learning spaces: the simulation-space and the reflection-on-action-space. The method of simulation-based learning is characterized by the learner conducting a process in response to a sequence of tasks simulating a typical target practice issue. The learner therefore gets to act similarly to a practitioner and to make use of knowledge appropriate to the problems in the case. Depending on how much of target practice the simulation emulates, it may enable learners to experience participation 'as-if' in a professional practice and "involvement in a yet-to-be-fully-experienced activity" (Beach, 2003, p. 46).

The aim of simulation is to 'learn to do practice'. Again, there are several ways in which this may be conceptualised learning-theoretically, depending not least on what one construes 'doing practice' as involving. From a behaviourist, instructional design viewpoint, simulation is training of practice skills, relatively narrowly construed, as behaviour that solves specified tasks (Grierson, 2014). A criterion for simulation-based learning is therefore that there is functional task alignment between learning and future use situation rather than high fidelity understood as physical faithfulness of the former to the latter (Hamstra, Brydges, Hatala, Zendejas, & Cook, 2014). From a constructivist viewpoint, learning to do practice involves constructing the relevant cognitive and behavioural schemas that skilful acting consists in. Simulation may be utilized to develop these schemas and will be particularly relevant if experimentation in target practice is dangerous (e.g. aviation, medicine), unethical (e.g. medicine), or not easily accessible (e.g. space flight). From a socio-cultural viewpoint, 'doing practice' does not consist solely of displaying certain behaviours involved in skilful action, nor of developing schemas for such action. It involves the broader participatory understanding of the value ascribed to such skills by practitioners and of their significance to the broader sense-bearing contexts in which they are used. It also involves the development of practice-specific ways of engaging with other practitioners and of understanding the sense-bearing contexts and one's place in them. Simulation from a socio-cultural point of view should therefore concern not only specific tasks, but the practice as such. However, there are decisive limits to the degree to which one can establish 'functional practice alignment' (to paraphrase the behaviourist term) between a simulated practice and the target practice, because the significance of activities (micro-level) will always be determined to some extent through the broader sense-giving context (meso-level). In particular, simulating a target practice e.g. through role-play within an educational practice will endow the activities with a complex mediational character (resulting e.g. in 'breakdowns' in the form of laughter on the part of role-playing participants). This character is perhaps better captured by the term 'as-if-and-yet-not'-activity, rather than by Beach's phrase "yet-to-be-fully-experienced activity".

Through the lens of NL, the basic characteristic of simulation-based learning is the possibility it offers learners to develop experiential knowledge of activities (micro-level), which have their counterpart in target practice, though in very different sense-bearing contexts (meso-level). The networked learning perspective here again sides mostly with the socio-cultural construal of simulation. On the other hand, it stresses - in agreement with behaviourist and constructivist perspectives, though for other reasons - that the micro-level of specific activities is significant, too, and should not be overlooked. Importantly, the experiential knowledge attainable through simulation-based learning need not be confined to behavioural skills alone. Experience with role-playing different practitioner perspectives will also supply a tacit dimension to descriptions of the target practice as well as to academic concepts and theories, and in particular to descriptions of the practitioner roles. However, given that the sense-bearing contexts involved in simulated and target practice are very different, learners' experiences of practitioner roles (and thus the tacit semantic content they supply) cannot be expected to align closely with actual practitioner experiences. For the same reason, it is debatable to which extent simulation-based learning offers the possibility of developing contextual perspectives to inform academic concepts and theories. Arguably, what simulation may facilitate in this regard is the development of mediational contextual perspectives, which are neither those of the target practice, nor fully those of the educational practice, but rather ones of the mediational practice of target-practice-as-contextualised-in-education. In Beach's terms, simulation-based learning supports learners in making mediational transitions (Beach, 2003) between educational and target practices. Through doing this, the learning design may support learners in transforming and resituating their academic knowledge as actionable knowledge in the simulated practice. Conversely, it may also support them in

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resituating their simulation experiences as tacit semantic content to resonate in their understanding of the academic perspectives. Perhaps most significantly, the fact that the target practice is accessed (only in simulation of course) within the educational practice opens rich possibilities for learners and teachers to reflect together on the differences between target and simulated practice at both the micro- and the meso-level. In comparison with the other learning designs, where the learner was relatively alone in establishing the connections between target and educational practices, this constitutes a clear advantage of simulation-based learning over the others. This advantage may to some extent outweigh the lack of real experiences with target practice and the resulting lack of development of target-practice contextual perspectives and experiential knowledge at the meso-level.

Concluding remarks

In this paper, we have analysed the three different learning designs of 'case-based learning', 'design-based learning', and 'simulation-based learning' as forms of networked learning. We have focused on the purpose, content, method, and theoretical basis of the learning designs. This has enabled us to identify the different connection forms, which the learning designs facilitate between learners' experience in target practice and educational practice. Thus, we have argued that case-based learning establishes a relationship of inquiry between learner and target practice with the aim to support the learners in gaining understanding through participating in a sense-making process. The relationship established in design-based learning is one of innovation with the aim to support learners in developing understanding of practice through changing it. Finally, in simulation-based learning, relationships of imitation of target practice and engagement in 'as-if' practice are established with the aim of supporting learners in developing situated skills and knowledge.

From a meta-perspective, our approach of analysing learning designs through a specific understanding of networked learning helps qualify both: It allows the perspective of networked learning, understood as learners' connecting of contexts in which they participate, to become clearer through use. Similarly, for learning designs, it disclosed the specific ways in which different connection forms between target practice and educational practice can facilitate distinct forms of learning, participation, and the situating of practice. The key point here is the concept of 'practice' and the way in which our articulation of the learning designs as networked learning has highlighted different ways of engaging and understanding practice in the design for learning.

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