COMMENTARY PAPER

Examining resources and re-sourcing as insights into teaching

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1 Introduction

The rich set of papers in this issue of *ZDM* weaves together several distinctly important perspectives on the work of teaching. Guided by the introductory paper by Pepin et al. (2013), the reader is invited to consider an expanded theoretical framework underlying research on teachers' interactions with resources. This expanded framework is accomplished through an empirically driven, theoretical integration of sorts, in which different theoretical perspectives are brought together to explain and interrogate a complex phenomenon.

The first perspective focuses on the relationship at the center of teachers' interactions with resources in their teaching. In my work (Remillard 2005), I have argued for taking participatory perspectives on teachers' use of resources. This view emphasizes the interactive and transactional nature of this work, framing curriculum use as a dynamic and ongoing relationship between teachers and resources, a relationship shaped by both the teacher and characteristics of the resource. This perspective is embraced and extended by the notion of documentational genesis, a term offered by Gueudet and Trouche (2009) to describe teachers' work with documents and the production of new documents that result from these activities. In addition to capturing the mutually shaping relationship between the teacher and tool, this theoretical perspective holds that documents are situated within schemes of usage assumed by the teacher. In other words, using resources

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necessarily involves re-sourcing them for one's specific purpose and context.

Gueudet and Trouche's (2009) characterization of documentational genesis suggests that the process by which teachers and resources interact and produce new documents is an ongoing one. By looking at this process over time, we can see its cyclical nature in which documents are designed and re-designed. We can also see a connection to another theoretical perspective used to guide and examine many facets of instructional design. Design-based research as a methodology and theoretical stance on the work of teaching places central emphasis on the cycle of design, enactment, analysis, and re-design. Teaching is seen as a generative and responsive activity that goes through cycles of design, analysis, and refinement and from which theory is produced and refined (Design-Based Research Collective 2003). From this perspective, documentational genesis can be understood as an instance of design-based research. The documentational genesis (or participatory use) lens focuses on the teacher–tool interaction, whereas the design research lens places emphasis on the process of ongoing design and analysis.

These perspectives allow us to theorize teacher–resource interactions at the level of the individual teacher. When these interactions are examined within their day-to-day contexts of schools and within communities of teachers, the collective possibilities for documentational work are uncovered. Lave and Wenger's (1991) notion of communities of practice offers a framework for understanding the way professional communities of teachers work collectively on shared enterprises. In their introductory paper, Pepin et al. (2013) argue that documentational genesis often occurs within communities of practice and leads to collectively produced documents and shared learning. A number of papers in this collection illustrate different

formats for teacher collaboration around resource design and analysis as well as possible forms of individual and collective growth that can result from such arrangements.

A fundamental theoretical thread running through these perspectives is Vygotsky's (1978) notion of practice as inseparable from tools both employed and produced through the process and as deeply rooted in the particular context. Whereas some views of teaching and, in particular, of curriculum use emphasize implementation or brokering of existing, fully formulated resources, these perspectives frame teaching as a design activity and curricular resources as contributing partners in the generative work. By placing a magnifying lens on resources in the work of teaching, the papers in this issue, as a set, make a conceptual move in our understanding of teaching by highlighting the extent to which resource work (documentational genesis) is central to teaching. This framing contrasts with a view of teaching as primarily transmitting knowledge and orchestrating interactions with and among students in the classroom where resources play a supplemental or auxiliary role.

Taken together, these papers elaborate and uncover several roles that documentary resources play in the work of teaching. Below, I discuss the three most prominent of these roles.

2 Resources as tools in design work

The most common understanding of resources in teaching is of them as a tool that supports, guides and enhances teachers' instructional designs, both in preparation for and during classroom interactions. This conception of resource is often embraced both literally—teachers use resources to design and enact instruction—and theoretically in terms of an agent–tool relationship central to sociocultural frameworks (e.g., Vygotsky 1978; Wertsch 1998). In this theoretical view, both the teacher and the tool are active participants in the instructional design process (Remillard 2005). A number of papers in this collection employ this conception and demonstrate ways that characteristics of resources, some physical, many digital, fundamentally shape the design process. Moreover, the design process results in change in both the teacher (learning) and the tools (new documents as described by Gueudet and Trouche 2009).

3 Resources as artifacts of design work

A second understanding of resources in these papers is directly related to the ways they are transformed through their use. Resources are artifacts of the design work of teachers. From a socio-historical perspective, as tools, all resources are artifacts because they are products of sociocultural evolution (Wertsch 1998); in fact, the terms tool and artifact are often used interchangeably when referring to their mediational properties in human activity. When examining the differing roles of resources, I find it useful to note separately the ways that resources are representations of the design work teachers do. Cole (1996) describes an artifact as "an aspect of the material world that has been modified over the history of its incorporation into goal-directed human action" (p. 117). The examinations of teachers' uses of different types of resources—material, digital, video—in these papers illustrate how new resources are produced by teachers individually and collectively. In this way, in addition to being cultural artifacts in a very broad sense, instructional resources can also be understood as local artifacts of teachers' documentary work.

4 Resources as objects in design work

A third perspective on resources evident in a number of papers in this issue is as objects of design work. This view extends from the previous two, but is less commonly addressed in sociocultural analysis. An understanding of resource use as a design activity also points to teacher-adapted or generated resources as objects of the design work. In other words, producing documents that serve as resources might be understood as one of the components of teachers' work. The production of documents is especially evident as a marker of teachers' collective design work. For teachers who collaboratively adapt or generate resources to use in their individual classrooms, seeing resources as an object or product of their design work expands the notion of what it means to teach and where and when teaching occurs.

In addition to making these conceptual contributions related to the nature of resources, these papers bring to the surface a number of empirical issues that are important to the field's understanding of resources in teaching and that merit continued research. I mention several here.

5 Situating resource use in systems and contexts

Just as documentational analysis broadens the view of teaching to include documentary work, the varied accounts of resource production and use in this issue also demonstrate the way this work between teachers and documents is situated in larger systems and contexts. From the availability, type, and quality of resources to the extent to which teachers are supported, encouraged, or have time to engage in documentary work, these contextual features influence the nature of how teachers engage with resources and the

results, both in terms of new documents and teachers' understanding of their work.

6 Resource design matters

Many of the papers illustrate how particular elements of the design of resources are significant in shaping how teachers (and students) interact with them and the resulting instructional designs. Of particular significance in several papers is the role that digital resources play in this process. Digital resources have unique affordances as well as constraints that engender particular kinds of teacher (and student) use. It appears evident that digital resources offer possibilities for both instructional design and teacher collaboration that are different from material resources, but these possibilities are only beginning to be understood. That said, although further investigations of the affordances of digital resources are warranted, a critical take-away from these findings is less about digital tools per se and more about what digital tools allow us to see about the effects of particular features of tools in use. In other words, the design features of the resource matter. Understanding how these features are influential in their use and the instructional designs they promote is an area where more research is needed. These papers offer a starting place.

7 Improving capacity for documentational work

The notion that content and design of resources matter for how they are taken up and modified by teachers moves the discussion of resource use from being purely theoretical to one that raises normative questions. Theoretically, teaching involves documentary work and all resources, regardless of quality, require interpretation and adaptation. From a normative perspective, resources can be designed with greater capacity to support productive use. Moreover, teachers vary in their capacities (individually or collectively) to engage productively in documentary activities. A necessary outcome of research must be to understand how to increase the capacity of teachers to engage in documentational genesis as well as how to intentionally design resources to support this process. Educational improvement at the system level depends on the outcomes of such research. This point echoes an important argument made by Cohen et al. (2003) about the tendency for educational reform efforts to overemphasize the adoption of new resources and underestimate the necessity of capacity to use these resources.

They suggest that reform initiatives invest in developing and refining the skills with which resources are employed.

8 Extending our vision

On a final note, I point to Visnovska and Cobb's (2013) analysis of classroom video as a resource for teachers' professional development. This paper offers an insightful way to apply a documentational framework within a professional development context. In this case, the segments of classroom video served as the resources. Through analysis in a professional learning community, teachers took up, interpreted, and modified these resources as tools in their analysis of teaching. This approach to employing the documentational genesis framework is promising for both work with teachers and the generative nature of the framework.

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