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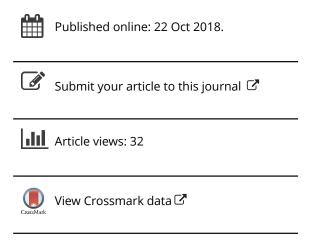
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Continuing the dialogue: curriculum, Didaktik and theories of knowledge

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ABSTRACT

Joseph Schwab's famous remark, that the field of curriculum is 'moribund' no longer able 'to ...contribute significantly to the advancement of education'—has long echoed in curriculum studies. Although its specific meaning has changed, it still rings in our ears today. It now applies as much to discussions in the United States and United Kingdom as it does to those in Northern Europe—where the cognate field of General Didaktik has been described as 'quiet', or more recently, by Zierer and Seel (2012), as 'dead'. This 'virtual issue' of the Journal of Curriculum Studies brings together five articles of direct relevance to the contemporary 'crisis' in transatlantic studies of curriculum and instruction that also share a common focus on the question of curricular content. 'None of the many traditional American educational approaches have paid serious attention to the "school subject" or "instructional content," as Westbury and Doyle have pointed out (1992, p. 137); and others in curriculum studies see this as the underlying reason for its ongoing crisis. This introduction provides an overview of each article included and concludes by outlining a few of the possibilities and challenges presented by questions of 'content' and 'knowledge' in curriculum studies.

KEYWORDS

Curriculum; Didaktik; curriculum theory; curriculum content; sociology of knowledge; hermeneutics

Starting a dialogue

One would think that cross-cultural and intra-linguistic comparisons would be at least a tacit component of work in curriculum studies as an internationalized field of research. However, as Hopmann and Riguarts make clear, efforts at a transatlantic dialogue between the continental and English-speaking world began only with their 1995 article 'Starting a dialogue', the first in this virtual issue. They admit that there have been moments of influence between Didaktik and Englishspeaking curriculum at various points in history. For example, there is the highly appreciative American reception of German educational and instructional ideas in the late 19th century. There is also the more recent adoption of American ideas of curriculum in Germany in the 1970s and 1980s. Regardless, Hopmann and Riquarts conclude their brief article by saying: 'Both traditions' do not at all 'know each other well enough' (p. 8). And based on 'a strong belief that we need an integrative approach' to address common concerns, the authors recommend that both traditions make an explicit effort at mutual acquaintanceship (pp. 8-9).

In introducing Didaktik to their English-speaking readers, Hopmann and Riquarts helpfully explain that it conceives of teaching in terms of the Didaktik triangle, a 'model' which brings into connection 'the content, the learner and the teacher' (p. 4). In so doing, it fulfills a key requirement that arose with mass schooling in the 16th century, and that became even more urgent with increasing administrative centralization in the 18th and 19th centuries. The Didaktik triangle provides a framework that, as Hopmann and Riguarts explain, that 'enables [general] state



directives to be translated by teachers into [the particularities of] classroom practice... [a] conventional way... to construct as well as to translate these guidelines' (p. 4). To understand how this triangle may be applied, however, it is necessary to take on a manner of thought that might seem quite a departure from the ways that curriculum is schematized in English-language contexts. This 'other' way of thinking is one that embraces teaching and learning as primarily *relational* activities, and that sees these as structured through tensions and contradictions: The didactic triangle delineates how the teacher relates to both student and content, and how this same teacher works to affect and *mediate* the *student's relation to the content*—without any of these relations and tensions being minimized or resolved (Figure 1; e.g. see: Friesen & Osguthorpe, 2017). Thus, it provides teachers with ways of assessing content—both according to state mandates and according to the particular situation of the student and the class.

Models for teaching and instruction familiar in English almost invariably conceptualize the domain in terms of sequences and procedures. This reflects the very different relationship between teachers and curricular requirements in English-language contexts. In this case, principal concern is not the translation of general directives to specific circumstances, but rather the attainment of measured 'instructional objectives' through 'instructional procedures' (see Figure 2). Of course, to conceive of curriculum and instruction primarily in *processual* terms—'as a series of actions or operations conducing to an end' (Merriam Webster)—means to focus precisely on this end and on the most efficient way to reach it. It is to place curriculum, in other words, in an instrumentalist or 'technicist' frame, generally to the detriment of those elements, to the student, teacher and content, that can be seen to constitute it. In addition, content in this context is seen as neither

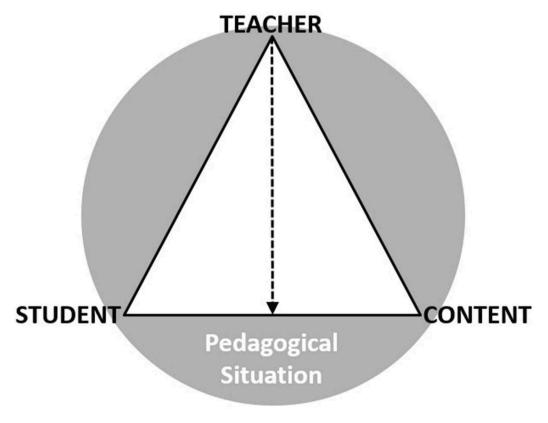


Figure 1. The Didaktik triangle (from Friesen & Osguthorpe, 2017).

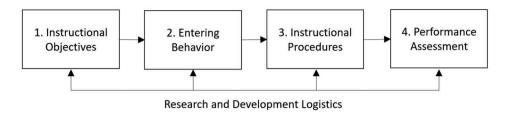


Figure 2. 'The component phases of an instructional system' (Adapted from Glaser, 1962).

being differentiated in its types nor as having a specifically pedagogical form or nature. It becomes simply one of the many objectives and their assessment.

Within curriculum studies, this technicist reduction of educational substance to questions of operation and efficiency has been critiqued, most prominently by William Pinar (2012) and reconceptualist curriculum studies (Pinar 2000). By concentrating on experience as 'lived', the reconceptualists have sought above all to rescue the subjectivity of the individual, ultimately both student and teacher, from the machinery of curricular efficiency. However, the role and characteristics of curricular content are also overlooked in this critical approach. They are seen as merely part and parcel of a larger regime of indoctrination, testing and control imposed by political interests.

Didaktik, content and 'exemplarity'

Instructional content, however, has long been a central concern in theories of Didaktik. This is clear from the second article included in this virtual edition, which accompanied Hopmann and Riquarts' 'Starting a dialogue' in 1995. This is a translation of Wolfgang Klafki's 'Didactic analysis as the core of preparation'. Klafki, 1995, whose 'critical-constructive Didaktik' is likely the most influential approach of its kind in postwar Germany, begins by emphasizing the German notion of Bildung (translated as 'formation' 'development' and/or 'self-education'), meaning that he understands the education and growth of the child not so much in terms of 'definable, special area[s] of knowledge, ability, attitude, or behavior, but [via] the world of the mind, the habits of the young person as a whole' (p. 23). As illustrated below, this broad, even wholistic conception of education and growth serves as an indispensable frame of reference for Klafki's conception of Didaktik, and is still an important reference point in debates and discussions related to education and its policies. Klakfi defines the titular notion of his article on teacher preparation in terms that reflect the inclusivity of Bildung and the structure of the Didaktik triangle: namely as the teacher's work to mediate the students' relation to the content in particular ways: 'preparation is intended as the design of one or several opportunities [by the teacher] for certain children to make fruitful encounters with certain contents of education' (p. 16).

Klafki can be said to address content specifically through the unifying principle of the *example*, of *exemplarity* (*Exemplarität*). Whatever the object or content selected for a class or lesson, Klafki emphasizes, it is always something *in particular*, and it always exemplifies or 'represents a larger set of cultural contents' (p. 150). In this connection, Klafki differentiates between two aspects intrinsic to any piece of content that can be understood as specifically 'pedagogical': The first is its *Bildungsinhalt*, referring simply to the content on its own, its own everyday meaning and function or as Klafki says, its 'inner meaning' (p. 24). This might be a terrarium with bean sprouts in an elementary classroom, or a periodic table in high school chemistry. However, they can be used to teach or explore many different things, for many different 'lessons'. 'One and the same item of content can exemplify a variety of general subjects', Klafki explains (p. 23). Sprouting beans can exemplify plant life, gardening, even the food on our plates, just as the periodic table can be used to teach molecular physics or simply the idea of physical 'elements' per se. Klafki refers to the purpose to which educational material is directed as its '*Bildungsgehalt*', its educational *substance*.

With this distinction between educational content and substance in mind, Klafki explains, any instructional item is to be subjected to five questions (or rather, sets of questions) that clarify its status as an exemplar. This is known as its 'Didaktik analysis' in preparation for teaching. The first question is, 'What wider or general sense or reality do these contents exemplify and open up to the learner'? Or: 'What ... can be grasped by dealing with these contents as "examples?"' (p. 22). The second asks: How and 'whether the content in question, i.e., the substance to be investigated in it, can and should be an element in the present education of the young people, i.e., in their lives, in their conception of themselves and the world, in their areas of competence' (p. 23). The third question focuses on the students' future, asking whether 'this content' will 'play a vital role in the intellectual life of the adolescents and adults the children will become'? (p. 24) Both the needs of children in the present and the demands placed on them by the future form an additional, productive but irresolvable tension that subtends both Didaktik and Klafki's general conception of education. The four and fifth questions, finally, ask after the structure of the content, and about the concrete phenomena, situations or experiments through which this structure can be made 'interesting, stimulating, approachable, conceivable, or vivid' (p. 26).

Curriculum and 'powerful knowledge'

The third article included in this issue has a similar focus on curricular content; and it also frames its response using the language of 'crisis' inaugurated by Joseph Schwab. Although it does not reference Northern European *Didaktik* explicitly, its framing of this curricular crisis and its response to it (as I will show) have effectively become a part of the 'dialogue' that Hopmann and Riquarts sought to initiate. This is United Kingdom scholar Michael Young's 'Overcoming the crisis in curriculum theory: a knowledge-based approach' from 2013. Like Klafki, Young uses a question to define his approach to educational content, specifically, 'what do students have an *entitlement* to learn'? (p. 101; emphasis added). And like the *Didaktik* tradition in general, Young defines education as an activity that broadly defines us as humans: '...as educators, we have the responsibility to hand on to the next generation the knowledge discovered by earlier generations. It is this element of continuity between generations which distinguishes us from animals; it is a way of saying that we are always part of history' (p. 101).

On this basis, Young goes on to identify curriculum's long-standing avoidance of questions of 'knowledge' as the principle grounds for its ongoing crisis. He describes this crisis as arising on the one hand from the 'technicist' approach to curricular efficiency, and on the other, from the response to technicism on the part of reconceptualist and related curriculum theorizing—labelling the latter 'ideology critique'. Young advocates for a 'knowledge-based approach to the curriculum', saying that above all, what 'curriculum theory needs' is 'a theory of knowledge' (p. 107). He then takes it upon himself to provide the outlines of such a theory.

Young articulates his theory under the aegis of what he calls 'powerful knowledge'. This is knowledge that is notably different from curricular 'content', as described above. It is not an item or piece of educational material that is exemplary—that has been made meaningful to students in terms of their present and future. It is instead 'knowledge that is worthwhile *in itself*', (Young p. 117; emphasis added). Its value exists independently of any educational or curricular significance or purpose. Students should be told, Young says, that they should 'never apologize that they need to learn' such knowledge (p. 117). It is above all knowledge that is specialized and disciplinary in nature: It is 'specialized', Young explains, 'in how it is produced (in workshops, seminars and labs) and in how it is transmitted (in schools, colleges and universities) and this specialization is expressed in the boundaries between disciplines and subjects' (p. 108; emphasis in original). As a result, Young continues, it is 'not general knowledge', and is thus to be 'differentiated from the experiences that pupils bring to school or older learners bring to college or university' (p. 108; emphasis in original).

Further moments of convergence and divergence between Klafki's conception of content and Young's powerful knowledge are significant: Like Klafki, Young implies that the point of his powerful knowledge is not simply to 'replace a pupil's everyday experience'. Instead (and despite its differentiation from everyday knowledge), Young says that it builds on and 'extends that experience', giving the child the possibility 'to generalize about' what he or she experiences everyday. However, unlike Klafki, whose Didaktik analysis repeatedly emphasizes the relation of what is being learned to students' 'conception of themselves and the world,' Young sees this knowledge as ultimately indifferent to students' interests: '[A]lthough knowledge can be experienced as oppressive and alienating,' Young admits, 'this is not a property of knowledge itself. An appropriate pedagogy,' he continues 'can have the opposite consequences—it can free the learner to have new thoughts and even think the "not yet thought" (p. 107). But in the final analysis, what is important for Young is not how this knowledge is taught, but rather, 'the commitment' of the learner 'to a relationship to' such powerful 'knowledge' (p. 107). The student has the entitlement to acquire knowledge that has been deemed 'powerful;' but it is ultimately up to the student to realize this entitlement.

Didaktik, curriculum and the power of knowledge

It is precisely a comparison and contrast between Klafki's Didaktik and this notion of 'powerful knowledge' that is at the heart of the fourth and final article in this virtual issue. This is Zongyi Deng's 'Content, Joseph Schwab and German Didaktik' (2015). Here, Deng takes up Young's response to the crisis in curriculum studies and connects it back to Klafki and German Didaktik, revisiting Schwab's conception of curriculum along the way. Deng begins by affirming Schwab's infamous declaration of crisis in curriculum studies, and expands on the reasons for its current protraction: 'much contemporary curriculum theory is characterized by what Schwab ...called "a flight from [the] subject of the field," that is, by a turn' away from content (among other things). This is also a turn, Deng emphasizes, towards 'issues of power, politics, race, gender, etc. and to fashionable discourses such as sexuality, postmodernism, post-structuralism, postcolonialism...' (p. 774). Although he is most appreciative of Young's work to 'bring knowledge back in' to curriculum discourse (p. 774; emphasis in original), Deng takes issue with Young's insistence on 'powerful knowledge' as something 'worthwhile in itself'. Young and his colleagues, according to Deng, 'fail to explain how powerful knowledge has to be "unlocked" and transformed to bring about the cultivation of... intellectual and moral powers or capacities of students' (p. 775). They have failed, in other words, to show how knowledge can become meaningful as curriculum or as curricular content. It is in his consideration of ways of achieving this 'unlocking' or 'transformation' of knowledge to become pedagogically meaningful content that Deng makes use of both Schwab's curriculum theory and Klafki's critical-constructive Didaktik.

Working independently from Klafki and German Didaktik, Schwab, as Deng explains, developed a curricular theory based on the 'structure of the disciplines' that sees educational content as having multiple aspects or 'faces': The first, its 'purport', 'that which it [the material] conveys' (Schwab, 1973, p. 515) can be seen as being the effective equivalent of Klafki's Bildungsinhalt, the content's manifest 'inner meaning'. Reading 'The Practical 3: Translation into Curriculum' (1973) one can identify two further Schwabian aspects of content as variations on Klafki's educational substance or Bildungsgehalt: The first refers to the 'disciplinary origin' of the content. The educational substance of a bean seed or the periodic table has a clear disciplinary association: The germinating seed is most readily used to teach lessons related to biology or ecology, while the periodic table obviously has its disciplinary origin in chemistry. Schwab thinks of this in terms of the knowledge of singular disciplinary structures, methods and controversies from which the particular content emerged, and which form the ultimate aim of any given curriculum, broadly speaking. The second aspect of a given piece of educational content is named by Schwab its 'access disciplines' referring to the varying lessons, topics and the other disciplinary teaching possibilities that the given material can afford.

In further exploring how knowledge might be thus mobilized educationally, Deng provides an overview of the elements of Klafki's critical constructive *Didaktik* that largely parallels the one provided above. Deng then concludes that Schwab's curriculum theory 'is largely compatible with German Didaktik': 'Both hold the development of self-understanding, human intellectual and moral powers as a central aim of education. Both view academic disciplines as an important resource for achieving such an aim' (pp. 781–782). What is most important for Deng, however, is the development of intellectual and moral powers, which he sees as clearly superseding any intrinsic value that content or knowledge may bring with it. As a result, for Deng, it is not a question (as Michael Young puts it) of what knowledge students are most 'entitled to learn'. Instead, it is a question of what content can most effectively serve as a 'resource for achieving... the development of intellectual and moral powers and capacities of students' (p. 775; emphasis in original).

The point of his cross-cultural curricular comparison, as Deng informs us, is 'to extend and deepen the conversation' (p. 775). However, in so doing, Deng raises significant questions about how precisely curricular content is 'to be "unlocked" and "transformed" to become material that would meet the moral and intellectual educational aims he has identified. However, for this question to be addressed, Deng makes it clear that much theoretical work is first needed. In a rather dense sentence in his conclusion, Deng explains that what is now required is a theory of knowledge or content that 1) 'elucidates [how] the... theories and methods... of a particular knowledge type [can] contribute to the cultivation of intellectual and moral capacities'; 2) 'that addresses how knowledge is selected and transformed into curriculum content' and 3) that shows 'how such potential can be disclosed or unlocked by teachers in a classroom situation' (p. 782).

Conclusion: knowledge and content, alienation and subjectivity

Young and Deng are right, I believe, in emphasizing the need for new and different ways of understanding knowledge in the light of its centrality to curriculum. Deng's call for theory 'that addresses how knowledge is selected and transformed into curriculum *content*' in particular highlights something that has long been missing in curricular discourse. However, a quick survey of fields such as the sociology of knowledge or philosophical epistemology shows that theories of knowledge with the breadth and flexibility implied in this criterion (and in others identified by Deng) are in short supply. For example, Karl Mannheim's structural theory of knowledge or Berger and Luckmann's social construction of knowledge would be of little help.

In particular, the first of Deng's requirements, that the content and methods of a specific knowledge type (e.g. the scientific method, historical investigation) be linked to the development of student capacities, seems especially challenging. This is illustrated by the familiar fact/value distinction. Simply put, what is true or factual, and the methods and theories used to establish it as such, is not the same thing as what is right or valuable. The content and structure proper to a discipline tends to develop and be debated in ways that are deliberately isolated from questions about their developmental or moral value. Indeed, rigorous knowledge—for example, about the cruelties intrinsic to any national history, or the indifference of the laws of physics to activity in the playground—do not on their own lend themselves to the moral development of an expanding intellect. In terms of *Didaktik*, one might say that the value of such knowledge would depend on how the student is able to relate to it, and how the teacher is able to mediate this relationship to it.

The indifference of facts and disciplinary methods to moral and intellectual development raises further questions about Michael Young's claim that powerful knowledge is in itself neither inherently oppressive nor alienating. Think simply of a child in grade six learning that not everyone holds her father's political opinions. Or of young people learning what scientific methods have revealed about the deteriorating global environment they will inherit. Disciplinary knowledge—from histories of colonial exploitation through physics to the environmental sciences—tend not to provide comforting and familiar accounts about the world around one. 'The truth,' as the saying

goes, 'sometimes hurts'. This is recognized, for example, in understandings of 'Bildung' that underpin Klafki's Didaktik.

Alienation and self-alienation are seen as indispensible components of *Bildung* as the process or experience of formation and self-formation. Wilhelm von Humboldt famously wrote of the alienation inherent in human striving to 'reach beyond [one]self to the external objects' that through *Bildung* are 'integrated' into the self. Others have more recently characterized the moment-by-moment experience of learning as occurring at the uncertain threshold between 'no longer and not yet'—between moments in which the familiar is lost, but not yet replaced by anything yet clearly known (Mayer Drawe, as quoted in Friesen, 2017). Even John Dewey spoke of the 'self-alienation' that is a part of 'the mind giv[ing] up its immediate interests and go[ing] on [the] far journey' of higher learning (2008, p. 52).

The separation of fact and value and the alienation involved in intellectual and moral development brings this concluding discussion to a second point: Namely the undeniable reality of the subjectivity of the pupil, student or learner in the educational context. It is worth noting that in the dynamic of the conversation between Didaktik and curriculum covered above, the identities, backgrounds and experiences of the generations of students who are to acquire knowledge or develop intellectually and morally are little discussed. The one exception is Klafki, whose conception of the Didaktik triangle and the Didaktik of teacher preparation repeatedly emphasizes the importance of students and their world. In Young's case, though, student subjectivity appears as important only insofar as it might contribute to or detract from the student's 'commitment...to a relationship to' powerful knowledge. The one place where the position, experience or subjectivity of the learner is otherwise referenced is in Young's mention of 'ideology critique' and Deng's unflattering characterization of 'fashionable discourses such as sexuality, post-modernism, post-structuralism, postcolonialism'—which focus on issues such as 'power, politics, race [and] gender' (p. 774). It is precisely in these discourses and theories, rather than in those of Schwab, Young or Deng, where issues of experience and subjectivity can be said to be given their due.

My point in mentioning these discourses of 'power, politics, race [and] gender' is not to take the side of 'ideology critique' or of reconceptualist curriculum studies, however. My point here is instead to emphasize that any theory of knowledge that would connect disciplinary knowledge to moral and intellectual development must pay serious attention to students' subjective relation to this knowledge—whether this relation is one of integration or alienation, understanding or confusion. Instead of relying exclusively on teachers' transformation of the knowledge in the classroom, it is important to have an approach to knowledge that also sees *learning* and the learner as having an active, dynamic relation to it. Indeed, the decades-long ascendency of reconceptualist theory and ideology critique in curriculum studies can be seen as a manifestation of the irrepressible importance of these considerations. What would be valuable, I suggest, is a conception of knowledge, its development, circulation and educational transformation that would have a place both for its 'power' and also for students' participation in its transformation in the classroom.

One possible example of such an approach to knowledge and its inter-generational dynamism, I believe, can be found in a source which might initially seem much closer to Young's relative conservatism than to the political radicalism sometimes characteristic of reconceptualism and ideology critique. However, I believe that it may contribute, in some small way, the conversation referenced throughout this paper. It has the potential to do so, I believe, by simultaneously addressing both the marginalization of student subjectivity in Young, Deng and Schwab and the marginalization of curricular contents in critical and reconceptualist curriculum theories. This is the 'theory' of knowledge represented by hermeneutics. It has been articulated in various ways by a range of thinkers since Schleiermacher, from Wilhelm Dilthey to Paul Ricoeur.

However, for the purposes of illustration, I focus on H.G. Gadamer's *Truth and Method*, particularly the section titled 'Language as the Medium of hermeneutic Experience'. Here, Gadamer gives philosophical treatment to the example of a piece of content or knowledge, specifically in *written*

form. He does so by focusing on the transformation that occurs when this written knowledge is turned back into speech, when it is read, or rather, read aloud—for example, in a lecture or a reading of a (hi)story:

In writing, the meaning of what is spoken exists purely for itself, completely detached from all emotional elements of expression and communication.... Hence the meaning of something written is fundamentally identifiable and repeatable. What is identical in the repetition is only what was actually deposited in the written record. (2006, p. 394)

Something written, an element of knowledge or content—for example, one included in the day's lesson plan—is something that is, on its own, self-identical and self-sufficient. The content of my copy of the periodic table is identical to yours. Somewhat like Schwab's notion of 'purport' or Klafki's manifest content (Bildungsinhalt), it, and the disciplinary theory and methods behind it, exist in this sense outside of questions of value, purpose and application. However, in being read (ideally aloud) and in some sense also understood, its status, according to Gadamer, is utterly transformed. What was earlier self-sufficient and self-contained, and in this sense alien to us and even to its own possible meaning, is brought into greater proximity and familiarity. Gadamer explains this by referring to the written tradition as a whole:

Writing is self-alienation. Overcoming it, reading the text, is thus the highest task of Understanding [sic]. [...] Through it[,] tradition becomes part of our own world, and thus what it communicates can be stated immediately. Where we have a written tradition, we are not just told a particular thing; a past humanity itself becomes present to us in its general relation to the world. [...] It does not present us with only a stock of memorials and signs. Rather, literature has acquired its own contemporaneity with every present. To understand it does not mean primarily to reason one's way back into the past, but to have a present involvement in what is said. (pp. 392, 393)

Gadamer adds to this discussion the following sententious claim:

The understanding of something written is not a repetition of something past but the sharing of a present meaning. (p. 394)

When something is read aloud, when it is understood, it is not mechanically repeated or selfidentical. Instead it becomes part of 'our own world'—'our' world, both in the sense of individual and shared experience. It acquires 'its own contemporaneity' with the present. To learn, for example, how a bean seed can be caused to sprout, or to 'understand' the periodic table, is to connect it with what is relevant in one's present, to have 'a present involvement' with the otherwise self-sufficient content or knowledge. Teachers may of course have an important role in influencing what this involvement might be—for example, by highlighting particular aspects of its educational substance (Bildungsgehalt) or its relevance to students' present and future. However, a significant part of this present involvement depends on the subjectivity of the students, the contingencies of their 'contemporaneity', their historically-conditioned sense of themselves and their future. Simply speaking and discussing aloud words like 'democracy' or 'totalitarianism' after Brexit and Trump, for example, invoke a notably different significance and resonance—whether for students or teachers—than they possessed beforehand. 'Social media' or 'climate change', as further examples, may possess a rather different 'contemporaneity' for young students than they might for their teachers or parents. In grappling with these and other perhaps more mundane topics, students and children bring their own value and can even be said to understand these in their own way. It is students and student subjectivity, in short, that plays a significant role in realizing the utility of any given content as resource for intellectual and moral development.

I believe that overcoming any crisis in curriculum studies does not mean leaving behind questions such as race, ethnicity or sexuality in our increasingly diverse classrooms, but in understanding what such diversity can bring. It is a question, on the one hand, of finding a balance between student subjectivity and powerful knowledge and teacher ability, and on the other, of seeing the 'triangulation' of all three of these elements as integral to any transformation or unlocking of curricular substance that happens in the classroom.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Norm Friesen is a Professor in the Department Educational Technology at the College of Education, Boise State University. Dr. Friesen has recently translated and edited Klaus Mollenhauer's *Forgotten Connections: On Culture and Upbringing* (Routledge, 2014) as well as a book on *Existentialism and Education* in the thought of Otto Friedrich Bollnow (Palgrave, 2017). He has also published a monograph *The Textbook and the Lecture: Education in the Age of new Media*. He is currently undertaking funded research into pedagogical tact, and is co-authoring a monograph on *Human Science Pedagogy*.

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