

## Article

# Teachers' Use of Knowledge in Curriculum Making: Implications for Social Justice

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**Abstract:** Curriculum work is a key part of teachers' practice and involves engaging with different types of knowledge. The way in which teachers use this knowledge will influence pupils' experience of the curriculum in their classroom. In the globalised world of the 21st century, knowledge questions are important considerations, as schooling is situated in inequitable systems and social structures. This qualitative research study examined teachers' use of knowledge as they made the curriculum in their classrooms. Data were generated via interviews with primary school teachers in Scotland and thematically analysed. Five types of knowledge were identified and then critically examined using Nancy Fraser's framework for social justice. This enabled examination of the implications of teachers' use of knowledge in their curriculum work. Findings were congruous with previous research on this topic, highlighting the complexity of curriculum work. Our analysis suggests that while the focus on 'pupil-centred' education is important, as it acts to recognise pupils in curriculum work, the redistribution of knowledge is a key consideration in the globalised and digitised present day. Digital tools and spaces not only provide access to information but also provide new opportunities for inequity and oppressive social relations; continual reflection on the knowledge flow into schools is an important consideration for both teachers and policy-makers.

**Keywords:** social justice; curriculum; teaching; knowledge; schooling; recognition; redistribution; representation



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## 1. Introduction

Teachers 'make' the curriculum in their classroom by actively shaping the content and goals of curriculum documents to create learning activities which are appropriate for their pupils [1]. The transference of curriculum from policy documents to classroom activity requires engagement with teachers' knowledge of their learners, of teaching, and of the curriculum goals and content [2]. In recent years, skills have been foregrounded in many curriculums and knowledge has been associated with more traditional approaches to curriculum design [1]. Teachers' use of knowledge in their curriculum making is the focus of this article, not in relation to these wider curriculum debates but in consideration of the knowledge which flows into schools in the digitised context of the 21st century and the implications of this for social justice. The context of teaching practice and of the curriculum has changed significantly in recent years as digital technology and connectivity have become ubiquitous across many education systems. Digital technology creates new opportunities for developing knowledge as teachers and pupils can instantly access information if they are connected to the internet, information though that is not always trustworthy and is often prolific. Information does not instantly translate into new knowledge as knowledge is constructed and negotiated as we interact with each other in and with the world [3,4], and it is value-laden [5]. Access to digital resources does not automatically make us knowledgeable, but it does change the landscape of educational practice. Political, social, and cultural changes impact teachers' practice, but the ubiquity of digital technology

is potentially significant in relation to the knowledge teachers are able to draw on in their practice, as it is no longer contained in physical artefacts such as books or acquired via face-to-face interactions.

Applying a social justice lens, this research aims to examine the ways in which teachers use knowledge in their curriculum making. In this paper, curriculum refers to classroom curriculum or micro curriculum where teachers transform the embodied curriculum materials (textbooks and teaching plans) into learning experiences for students [2]. These curriculum practices distribute knowledge and have the potential to recognise and represent different sources and types of knowledge. They reflect the social and cultural strata of society [6] and have the potential to challenge or maintain the politically, culturally, and socio-economically uneven status quo. Through this research, we aim to critically analyse the implications of teachers' use of knowledge as they make the curriculum. For this, we use Fraser's framework [7] for social justice, which includes three key elements: redistribution, recognition, and representation. The details of these elements have been provided in the conceptual framework section below. The research questions posed were as follows:

- What are the implications for social justice of teachers' use of knowledge when making the curriculum?
  - How does the way that teachers engage with knowledge influence the redistribution of knowledge through the curriculum?
  - Does teachers' use of knowledge influence the representation and recognition of pupils through the curriculum?
  - In what ways does the knowledge teachers draw on enable equitable participation for pupils?

Teachers have a key role to play in knowledge work, and the curriculum plays an important part in organising knowledge. Access to knowledge and its organisation have both been highlighted as key considerations for schooling [8] and social justice [9].

## 2. Teachers Knowledge in Curriculum Making

Over time, the knowledge base that teachers are expected to master has shifted. In the 1800s, exams to enter the teaching profession focused on teachers' content knowledge with only a brief acknowledgement of pedagogy or teaching skills [10]. By the 1980s, this had shifted significantly, and pedagogy (teaching) was the key focus, with modest attention to content knowledge (ibid). Shulman's [10] conception of 'pedagogic content knowledge' and Darling-Hammond's [11] three types of teacher knowledge spoke to the breadth of teacher knowledge:

1. Knowledge of learners;
2. Knowledge of subject matter and curriculum goals;
3. Knowledge of teaching [11].

These reflected developments in understanding as research identified the situated nature of teacher knowledge [12]. Teacher knowledge was understood as encompassing both the theoretical and the actionable, practical knowledge of the classroom [13].

As the 21st century developed, so too did the expectations for teachers; in addition to subject matter, curriculum, and pedagogic content knowledge, they were also expected to have knowledge of general themes like globalisation and multiculturalism [14]. Alongside this, digital technology became a key consideration [15], and knowledge frameworks, like the 'Technological Pedagogic Content Knowledge' (TPACK) framework [16], were developed to include digital technology. Twenty-first-century knowledge frameworks also incorporate humanistic knowledge and values-based knowledge [16], further widening the scope of knowledge domains from which teachers draw. Goodwin and Darity [17], reflecting on the globalised and increasingly complex world, posited that teachers draw on five knowledge domains: personal, contextual, pedagogic, sociological and social. This widening base of knowledge reflects the increasing diversity of the classrooms in which

teachers engage with knowledge [18]. As we head towards the end of the first part of the 21st century, teacher knowledge is understood to include domains within and outside of the classroom, drawing together theoretical and practical knowledge.

The concept of knowledge in relation to the curriculum warrants examination and has been debated in the literature [19]. Curriculums generally draw on vertical (discipline) knowledge, which is assumed as ‘best for all’, and via active curriculum making, teachers connect this with the everyday knowledge of their pupils’ local experience [5]. The value of propositional (vertical) and vernacular (everyday) knowledge in this process is debated in the curriculum literature [20]. In doing this, teachers use a range of knowledge domains, and these seem to be expanding as the 21st century continues. The wider context in which schools and curricular are situated has also changed as digital technology has created new ways of accessing information and challenged the positioning of the teacher in the classroom [21]. No longer the gatekeepers of propositional knowledge, teachers are negotiating an age in which information is easily and immediately available for pupils [21]. In line with this, the ‘knowledge society’ rhetoric, present in the wider global context, focuses on generic competencies such as critical thinking, innovation, and creativity [19]. This is reflected internationally in curriculum developments [2], reflecting the changing expectations of teachers and the changing knowledge landscape in which teachers practice.

Priestley et al. [2] (p. 1) described ‘curriculum work [as involving] highly dynamic processes of interpretation, mediation, negotiation and translation, across multiple layers or sites of the education system’. Teachers draw on and negotiate many forms of knowledge as they make the curriculum in their classroom. However, as Zipin and Brennan observed, ‘no knowledge is simply ‘best for all’ un-vexed by valuations that are partial, not universal’ [5] (p. 173). Young argued that ‘powerful knowledge’ should be an ‘entitlement for all pupils’ [8] (p. 196), but this assumes that there is a certain body of knowledge which will enable all pupils to succeed [19]. Challenging this argument, Roberts [22] posited that the concept of powerful knowledge only works when we favour colonial or neo-colonial knowledge structures. He drew on the work of Connell [23], who traced the development of the knowledge structures which form the basis of modern disciplines to their creation when data was harvested from the colonial peripheries at the height of colonialism and brought to metropolitan centres to be worked with and developed into theory [23]. By this argument, the organisation of much of the vertical knowledge we find in curriculums emerged from the ‘metropole’, from the urban centres of a colonised world. The focus of debate in Scotland has reflected the pendulum swing between learner-centred and content-knowledge-centred curricula [24], but these arguments move beyond this to questioning knowledge itself as a social and cultural, and therefore value-laden [5], phenomenon. Roberts [22] and others [5,23] argued that the knowledge structures curriculums often work with do not value local or indigenous knowledge [22] and suppress alternative possibilities for knowledge projects [23]. This paints a complex picture of knowledge in the present time. As educators become aware of other knowledge structures, the work in Scotland, which is engaging with arctic pedagogies [25], is a good example of this; new questions can be posed about knowledge and the implications of teachers’ use of it. On a global level, we can observe ongoing colonial power structures, an example being the role of digital technology in the ‘westernization of cultures and systems of knowledge’ [26] (p. 300). On a more local level, this line of enquiry leads to a consideration of whose knowledge is distributed via the curriculum and who is recognised and represented in the process of curriculum making [27]. Research outside of Scotland has examined the curriculum with this in mind using Fraser’s [7] lens of social justice [5].

This paper sought to critically examine the knowledge which teachers draw on as they ‘make’ the curriculum, identifying what knowledge is being used and whose knowledge is being valued. This framing enables the examination of curriculum making through a social justice lens. The research study was carried out in Scotland, drawing on the experiences of a group of teaching professionals in one of Scotland’s 32 Local Authority areas.

### 3. Scottish Context

In Scotland, current entry requirements into the teaching profession require evidence of knowledge and understanding in six areas: Pedagogical Theories and Professional Practice, Research and Engagement in Practitioner Enquiry, Curriculum Design, Planning for Assessment, Teaching and Learning, Education Systems, and Learning Communities [28]. These areas of knowledge were identified by the teaching profession in a national conversation which developed the 2021 standard for registration. They highlight the breadth of knowledge which teachers identify as important to their practice and highlight the importance of knowledge of the context teachers are working in. The need for knowledge of 'Learning Communities' and 'Education Systems' reflects research findings that context matters [29], pointing towards the situated nature of teacher understanding [12]. The awareness in Scotland of teacher agency is reflected in the need for knowledge of 'Pedagogical Theories and Professional Practice', 'Research and Engagement in Practitioner Enquiry', ensuring that teachers can actively engage with research and theory using meaningful methodologies to enquire into their practice [24]. Teacher agency here is conceived through the ecological model: a phenomenon of willingness to 'act' that depends on the interplay of the social and material conditions in which actors act, their past experiences, and future aspirations. Agency is far more than individual capacity [24].

The Scottish Curriculum: The Curriculum for Excellence [30] reflects the international shift towards a focus on skills and capacities in curriculums [2]. Spanning Primary and Secondary schools the curriculum is designed for pupils aged 3–18 years of age. Its main purpose is to ensure that all pupils become successful learners; confident individuals; responsible citizens; and effective contributors. The curriculum is divided into eight curricular areas: languages, mathematics, health and wellbeing, expressive arts, religious and moral education, sciences, social studies, and technologies, and is underpinned by seven design principles: challenge and enjoyment, breadth, progression, depth, personalisation and choice, coherence, and relevance. It was introduced in 2010 and is now delivered to all pupils in state schools from 3 to 18 years of age. When the Curriculum was introduced, teachers were positioned as 'agents of change' [31], a welcome development for many teachers who saw the move away from a prescribed curriculum as an opportunity to develop teacher creativity [32]. The curriculum places the learner at the centre and emphasises active forms of pedagogy [33]. However, as the curriculum has developed over the last 13 years, curriculum narrowing has been observed in relation to subjects taken by pupils in secondary school [33], and debates about the 'learner at the centre' of the curriculum have arisen in the literature [34]. In 2019, teachers' use of knowledge was mapped in a national study [35]. The study observed that teachers' engagement with research and practitioner enquiry had generally developed [35]. The most common way to engage with research was via school-level data or 'online summaries of research findings to assess school context' [35] (p. 6). This reflects the emphasis of these elements in the professional standards which teachers in Scotland are required to evidence as they progress through their careers. The professional standards aimed to 're-professionalise' Scottish teachers, with knowledge playing a key role [36]. A critical review of the teaching standard observed that teachers 'knowledge creation' was 'located within a bounded space of teachers own practice' [36] (p. 10) and their collaborative work with colleagues. Work on teacher agency [37] has observed knowledge through a broader lens, expanding beyond propositional and theoretical knowledge to consider a more 'encompassing' view of teacher knowledge through examination of teacher talk [37]. This research observed the influence of policy, i.e., the Curriculum for Excellence, and related discourse, i.e., the language of learning, on teachers' talk about their practice.

### 4. Conceptual Framework

We are sympathetic to Zipin and Brennan's [5] line of reasoning that 'bring[ing] knowledge back in' the curriculum, as argued by Michael Young [38] among others, needs to be articulated within 'ethical principles for deciding curriculum purposes' (emphasis in

original, [5] (p. 174)). It is thus that this paper will primarily be using the work of Nancy Fraser [7] on justice as its conceptual framework.

It is beyond the scope of this paper to give a detailed overview of Fraser's work, as her ideas have developed extensively over the last three decades. However, we explore some of her ideas to explain the rationale for the research questions articulated in Section 1. Fraser developed a three-dimensional model of justice that will be explored here. According to Fraser, 'the most general meaning of justice is parity of participation' [39] (p. 5) in spheres of economic (redistribution), cultural (recognition) and political life (representation).

A starting point is to think through the issue of justice in relation to these three questions: What? Who? How? Zipin and Brennan, following Fraser, articulate these three questions in relation to the curriculum: 'What knowledge should be selected for curriculum always should raise further questions on whose knowledge, and how decided' (emphasis in original, [5] (p. 174). For Fraser, these three questions offer a critical reflection on the issue of recognition. She moves away from the recognition that is based on a model of identity to one that critically questions the requirements, procedures, and enactments that proceed from that which is statutory. As Alice Le Goff reminds us, for Fraser, the statutory is always a 'social struggle' [40] (p. 78): 'the struggle for recognition became the paradigmatic form of conflict at the end of the twentieth century, with fundamental injustices appearing to reside less in exploitation than in cultural domination'. The focus on cultural recognition of non-dominant or marginalised cultures, for example, of Indigenous students or Black students of African descent, is an important educational priority as many students underperform within the cultural exclusivity of Western education contexts in their privileging of white and middle-class ways of knowing and being and marginalising of 'other' ways of knowing and being. Such privileging reflects and reinscribes inequitable patterns of cultural recognition. Creating culturally inclusive and relevant learning environments that connect with the funds of knowledge specific to marginalised groups is seen to support greater participation, motivation, and achievement for students from these groups [41].

Identity politics often does not recognise these social struggles as the focus is on the individual's identity as being the problem that needs resolving. It is an issue of constant self-realisation on the part of the individual who has to constantly readjust to 'a single, drastically simplified group identity' [42] (p. 133). Consequently, the emphasis is not on the structures that individuals function within, or which structures continue to promote conformity and intolerance or maintain patriarchal structures [43]. For Fraser, the aim should not be on recognising a group's own identity but 'the status, for members of that group, as full partners in social interaction' [40] (p. 79). The concern for Fraser is recognition that occurs at the institutional level, and for her, institutions constantly tend to perpetuate injustice [43]. For Fraser [44], justice requires 'social arrangements that permit all to participate as peers in social life. On the view of justice as participatory parity, overcoming injustice means dismantling institutionalised obstacles that prevent some people from participating on a par with others, as full partners in social interaction' [44] (p. 27).

Recognition needs to work in close relation with redistribution, as without such processes, recognition risks being a merely ideological function [45]. As Amanda Keddie [41] argues, the redistribution in education, on one hand, recognises 'that schools are not equitable in their distribution of material benefits and, on the other hand, that students are not equitably positioned in their capacity to take up these benefits' [41] (p. 266). There are several international examples of programmes based on redistribution principles in education, such as the 'Disadvantaged Schools Program', instituted by the Australian federal government in 1972, 'Head Start Programme' in the United States or the 'Free School Meal' in the United Kingdom and the 'Pupil Equity Fund' in Scotland. All these programs are extremely important as schools continue to 'perpetuate class disadvantage through the inequitable distribution of education's material benefits and given that poverty and early school leaving continue to be the most accurate predictor of educational disadvantage and future economic and social marginalisation' [41] (p. 267).



To support her critique of injustices, Fraser adds a third dimension to her economic and cultural theory of justice, that of political representation, that is, being heard and accorded a voice. As Kevin Olson reminds us, not only is ‘participation . . . distinctively political in character’ (emphasis in original, [46] (p. 252) but that such participation (or non-participation) frames and informs how distributive and recognitive justice is understood and approached. ‘Fraser defines political injustices as arising when some individuals or groups are not accorded equal voice in decision-making—that is when the constitution of political space is such that all social actors are not equitably represented’ [41] (p. 273). As Fraser argues, political space or frames can be powerful instruments of injustice as they ‘furnish the stage on which struggles for justice are played out’; they ‘establish the criteria of social belonging’ and thus determine who and what counts in matters of distributive, recognitive and representative justice [42].

Other theorists develop these arguments, the capability approach providing a lens to conceptualize justice and social justice. Amartya Sen (who originated this approach) argues that capabilities refer to ‘real freedoms’ to do and to be [47,48]. Capabilities provide opportunities for people to lead their own lives the way they want to lead them. Rooted in the capability approach, the capability theory of justice views justice as a way of reducing capability shortfalls. Anderson argues that people must be entitled ‘to whatever capabilities are necessary to enable them to avoid or escape entanglement in oppressive social relationships’ [49] (p. 316). It is also important to note that under the broader umbrella of the capability approach, a utopian account of perfect or ideal justice is not needed [50]. Sen [51] insists that we do not need a theory that describes an ultimate ideal. Instead, a theory of justice should help us with making comparisons of injustice and lead us towards a less unjust society. Unlike Sen [51], Nussbaum’s [52,53] conceptualisation of justice focuses on thresholds. However, it highlights that reaching these thresholds is not all that matters for social justice. The questions ‘what social justice is or what social justice requires’ remain unanswered once the set thresholds are met. Whether justice is described in terms of achieving some thresholds or a way of reducing capability shortfalls, the capability theory of justice views justice in terms of capabilities instead of material resources. Applying Fraser’s theoretical framework for social justice as an analytical lens enables us to consider these wider conceptions of justice.

In this section, we give a theoretical context explaining the research questions of this paper. In the next section, we explain how data were gathered. We then analyse the data using Fraser’s theoretical framework, as described in this section.

## 5. Methods

### 5.1. The Study Participants

This research study used a qualitative methodology to examine primary school teachers’ curriculum making in their schools and classrooms. All the participants were working in a Scottish Local Authority (LA) that covered both urban and rural areas. Education in Scotland is organised by LA areas. There are 32 LA areas covering different size geographical areas across Scotland [54]. Each LA has a leadership team that supports schools and teachers and delivers professional learning. This paper is a part of a larger study which sought to understand the ways in which curriculum was developed, delivered, and experienced in the schools across this LA. For this paper, 23 interviews with staff in primary schools were extracted and analysed. This included six headteachers, six teachers in promoted posts, and 11 unpromoted teachers. Two of the headteachers and four unpromoted teachers were working in rural schools, as defined by the Scottish 7-point urban–rural classification scale [55].

### 5.2. Instrumentation

The data were collected via individual interviews. The interview protocol was rooted in the literature on curriculum making [2,19,24,38], and the research team finalised the interview questions after a detailed discussion. The interview included questions about

participants' views of curriculum, the relationship between curriculum, pedagogy, and assessment, and what shaped their curriculum views. Wherever needed, probing questions were also added in interviews.

### 5.3. Data Collection

The data collection started after receiving the approval of the ethics application from the University of Dundee. The educational administration of the local authority suggested the names of the potential participants; this may be a potential limitation as the sample was not random but focused on teachers known to the administration team. The research team invited the potential participants to participate in the study. The participants who volunteered then completed voluntary participation forms after reading information about the research, data management, and confidentiality of the responses. They were informed that they could leave the research at any time without giving any reason and about their right to withdraw their responses until the data were analysed. The interviews were conducted and recorded using secure Microsoft Teams (version 1.6.00.33567 (64 bit)) online meetings. On average, each interview was 45 min in duration. The data were collected from May 2022–June 2022.

### 5.4. Data Analysis

Before analysing the interview transcripts, all transcripts were anonymised using the participant's position followed by a letter, for example Headteacher A or Promoted Teacher A or Teacher F. The code 'Teacher' refers to the participants who were not promoted. After anonymising the transcripts, 23 transcripts were analysed in NVivo using descriptive coding [56]. This enabled the identification of the forms of knowledge which participants drew on in their discussions about the school curriculum. The themes were organised, re-organised and mapped iteratively to identify the different types of knowledge which was drawn on. Each of the identified themes and sub-themes was then re-coded deductively, identifying what knowledge was being drawn on, whose knowledge was being valued, and how decisions relating to knowledge were made. This framing focused on the knowledge that teachers drew on, taking a different perspective on knowledge from Zipin and Brennan [5]: rather than asking what knowledge should be included in the curriculum and what knowledge pupils should be entitled to engage with, this research study sought to identify what knowledge teachers were engaging with as they made the curriculum, whose knowledge was valued in this process and how decisions were made.

The 14 types of knowledge which were initially identified became five themes which capture the breadth of knowledge being drawn on by teachers:

1. Knowledge of Pupils
  - a. Pupils' interests;
  - b. Pupils' learning;
  - c. Pupils' progression;
  - d. Data about pupils.
2. Knowledge of Context
  - a. Pupils (beyond the classroom);
  - b. Parents and local community;
  - c. Local area.
3. Knowledge of Teaching
  - a. Pedagogy;
  - b. Classroom Practice (teachers' actions in the classroom, including classroom management and assessment).
4. Knowledge of Curriculum
  - a. Curriculum framework;
  - b. Curriculum areas;

- c. Content knowledge.
- 5. External Knowledge
  - a. Resources (teaching schemes, etc.);
  - b. Experts.

Following the knowledge mapping (Appendix A provides an overview), the analysis applied a social justice lens drawing on Nancy Fraser's framework for social justice. The analysis and discussion are presented in the following section.

### 5.5. Limitations

This study has potential limitations: Initial data collection was carried out by a team of researchers, with interviews being carried out online via Teams meetings by different interviewers. While teachers across the authority were familiar with Teams, the online connection may have influenced their interactions with the interviewer. Although the questions were agreed upon as a team, the interviews were carried out in a conversational manner, and the discursive nature may have led to different topics being focused on. Teachers were not asked directly about knowledge; the questions were focused on their curriculum work. These factors may limit the findings, requiring additional data to confirm the assertions presented below.

The participants were identified by the Local Authority senior team, and so may have been like-minded in their approach to curriculum. Additional studies in different Local Authorities or with randomised samples may identify different approaches to curriculum making. The coding was carried out by a single researcher, which potentially limits the robustness, although two colleagues were involved in the subsequent analysis and reference to previous literature suggests that findings reflect wider knowledge in this area. Applying the social justice framework of Nancy Fraser presents a particular perspective and the ideas and philosophical theories of other authors might speak to the data differently.

## 6. Analysis and Discussion

This section returns to the research questions, applying a social justice lens to critically analyse the initial results and answer the questions posed. The five themes identified above are analysed and discussed in the next section. The section is organised into three parts to enable analysis via Nancy Fraser's [7] framework for social justice. The following sections, therefore, consider 'what' knowledge teachers draw on, 'whose' knowledge they use, and 'how' decisions are made about knowledge in curriculum work.

### 6.1. What Knowledge?

Pupils' needs, interests, learning, and emotions were a key aspect of what knowledge teachers drew on as they enacted the curriculum. Pupils' interests were observed to actively influence the curriculum as teachers considered:

*'not just a, a child that has to go through the same learning experience as the next child but very much tailoring it to the, the interests, needs of that child at, who's part of that particular class.'* (Headteacher D)

Foregrounding pupils' interests and needs influenced how the curriculum was shaped: 'giving the children the choice to plan their curriculum' (Rural Teacher D) and enabled teachers to be 'led by the interests of the children' (Promoted Post D). Teachers' knowledge of pupils was drawn on as they made decisions related to the curriculum. Teachers discussed the importance of wellbeing and the role of emotional factors, drawing on their knowledge of these to identify when pupils were ready to learn or when they were not. This indicates that teachers understand the importance of wellbeing, although it is not clear if their understanding of pupils' wellbeing is in line with Sen's [47] idea of justice. This requires further research. These foci reflect the Scottish policy context, in which wellbeing is a key policy driver [57], suggesting that knowledge used by teachers is framed by their 'place' of practice. Policy structures, at a national level, influenced the way in which teachers



drew on knowledge in their curriculum making. Previous research has shown that teachers talk about their practice reflects the policy structures of their context [37]. Considering this through the lens of Fraser's [7] social justice framework, this suggests that teachers' use of knowledge reflects the 'place' in which their practice is enacted; we speculate that national policy bounds teachers' use of knowledge, shaping the decisions made about what knowledge is drawn on to inform classroom practice. The national discourses and policy structures which were seen to influence teachers' talk about their practice [37] are observed here to influence the type of knowledge they draw on when making the curriculum, valuing knowledge about the pupils' learning as a primary source of knowledge.

As well as being knowledgeable about the pupils' interests, needs, and learning within the classroom, participants also discussed their knowledge of pupils' context and community beyond the classroom. Knowledge of the local area echoed the knowledge discussed about pupils, emphasising the individual and the importance of context:

*'Linking into the child and their world and that's, that's where we come. So curriculum then needs to be about the children in that setting and those, those priorities because that's really different across [the LA]. We've got a wide range of different, different priorities in different towns, different challenges.'* (Teacher C)

Knowledge of the local area informed the planning and delivery of the curriculum. Headteachers and those in promoted posts discussed the way knowledge of the local area enhanced their curriculum provision:

*'We're in, you know, a beautiful bit of the country, we have a beach nine miles away, we're six miles away from the glens, we have forests on our doorsteps, we've got castles...'* (Promoted Post D)

*'So can we access the, the beach cause we're right on a, we're a coastal school. So we, can we go down and access the beach...'* (Headteacher D)

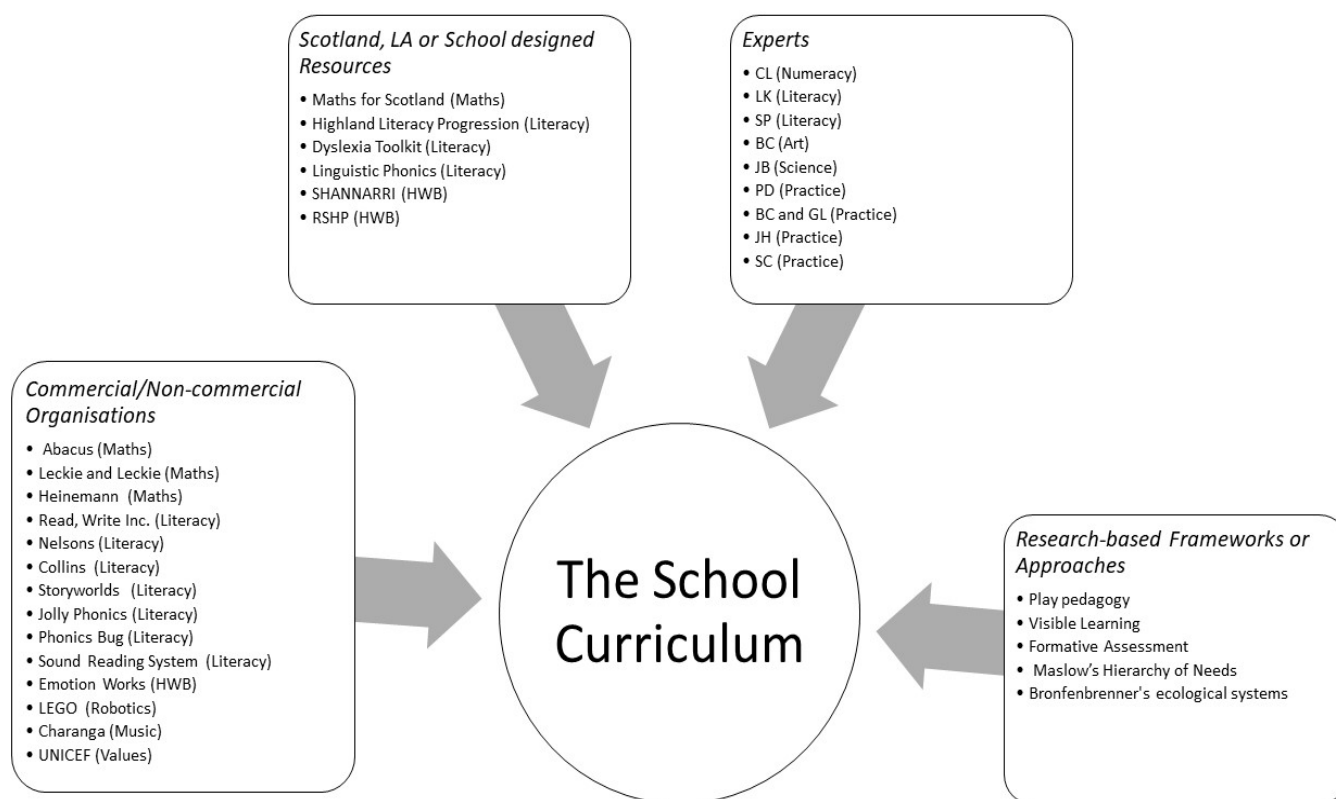
Socio-economic factors and data gathered from, or about, the pupils also contributed to participants' knowledge of the pupils and their context. Knowledge of play, nurture, wellbeing, and outdoor learning was also discussed in the interviews in conjunction with a focus on pupils' needs and learning. This reflects the national context in which teachers were practising where these foci relate to recent policies, discourses and initiatives, again situating practice within a national place [7].

The data collected in this study showed that as teachers made the curriculum in their schools and classrooms, they drew on all three of Darling-Hammond's areas of knowledge: 'knowledge of learners', 'knowledge of subject matter and curriculum goals', and 'knowledge of teaching' [11] (p. 304). This reflects previous research on teacher knowledge, highlighting the breadth of knowledge teachers draw on in their curriculum work [17]. However, in this study it was noticeable that the teachers' 'gaze' was more focused towards the knowledge of the pupil than other areas of knowledge. Knowledge of pupils' interests, progression and context were foregrounded, reflecting, perhaps, a national policy focus on 'the child at the centre' [58]. Read through a social justice lens, this suggests an engagement with recognition as teachers seek to recognise the needs of their pupils. Drawing on the knowledge of pupils and their lived experiences could enable connection to pupils 'funds of knowledge' [41] or support them to build capacities which will enable them to avoid oppression. It reflects the political framing of education in Scotland, as current policies centre around the attainment challenge, which aims to close the poverty-related attainment gap. However, by foregrounding knowledge about pupils, other types of knowledge—for example, of subject matter and propositional or theoretical knowledge—become 'backgrounded'.

Arguments that support social justice approaches to education highlight the importance of subject knowledge, as pupils need to understand the world if they are to be enabled to change it. The focus on the pupil, therefore, may have implications for the redistribution of knowledge via the curriculum. This connects to previous research, which has argued

that ‘process’ and ‘student-centred’ orientations overlook the role of the curriculum in redistributing knowledge [27]. These orientations are reflected in the data in this study; teachers foreground knowledge of pupils and discuss the process of curriculum making rather than their knowledge of content or subject matter. While this does not automatically exclude knowledge of content or subject matter, these aspects of teacher knowledge are noticeable in this data set for their scarcity. While previous work has examined the curriculum design and content [6,27], this research aimed to identify the knowledge sources teachers drew on as they made the curriculum in their schools and classrooms. Policy-makers have generally overlooked the ‘historic role of the teacher as gatekeeper to the classroom’ [59] (p. 21); in this research, we place the teachers’ role as central, examining how they use knowledge as they build the curriculum, and highlight the implications of this for social justice.

External sources of knowledge beyond the context of the school setting were mentioned in all of the interviews. A range of sources outside of the classroom and outside of the curriculum framework were used or drawn on as teachers built the curriculum in their schools and classrooms. These included schemes which schools purchased, such as Abacus for Maths or Read, Write, Inc. for Literacy; resources or initiatives designed by the school, Local Authority (LA) or nationally; specific people who were experts in Maths, Literacy, or other areas of practice; and research-based frameworks (Figure 1). Some of these overlapped each other as play pedagogy was both research-informed and a LA initiative. Most of the resources were related to Numeracy and Literacy, reflecting the aims of the ‘Recovery Curriculum’, which was repeatedly discussed.



**Figure 1.** Knowledge flow into the school curriculum.

The most common resources were commercial and therefore situated in spaces in which financial profit is a key driver. These resources could be expensive and yet more commercial resources were mentioned than other kinds of resources. It was noted that not all of these resources aligned with the Scottish Curriculum:

*'The other problem with the Abacas is that they don't exactly marry up with the Scottish curriculum, so there's parts of our curriculum that aren't maybe covered.'* (Teacher F)

There was a wide range of resources to choose from, and this required participants to draw on their own knowledge of teaching and their individual context to choose which was most appropriate:

*'We've been creative with how we've used the resources that we have.'* (Promoted Post D)

*'In terms of the actual scheme, there's a lot, a lot in it. Again, I just, I have to cherry pick a little bit because there's just too much in a lesson and sometimes it's a bit dry, you know, the ideas they've got, and you think, oh gosh, so often I might take the learning and, you know, the workbook pages that they're suggesting and things, but I'll put my own spin on it, and I tend to find that that's, that is better.'* (Teacher F)

This use of resources reflects the focus on the pupil, as teachers use their knowledge of pupils to amend the external resources. Returning to the concept of social justice this leads us to consider the redistribution of knowledge in relation to the structures which bring knowledge into the classroom. External sources enable knowledge to flow into the classroom, which teachers amend in terms of delivery, but it was not evident in this data that teachers questioned or critiqued it. Rather, their positioning seemed more to be as deliverers of the embedded knowledge (within the schemes and initiatives of external providers). Returning to Fraser's conception of social justice [7], as presented above, we can consider the influence of these structures on pupils—and teachers—parity of participation. Working from Keddie's [41] standpoint that not all schools have equitable access to material benefits and not all pupils are positioned equitably in terms of their capacity to receive them, we observe a tension within current curriculum making when viewed through a social justice lens. To meet the statutory requirements of the curriculum, schools are drawing on corporate resources from beyond the Scottish context, which do not always juxtapose congruously with the national and local requirements. Access to these resources is potentially uneven, and this raises questions in terms of equitable participation. The structures of knowledge which inform these resources originate in corporate spaces which are influenced by corporate drivers. If we return to Zipin and Brennan's [5] assertion that all knowledge is value-laden, we might consider what values are embedded within these knowledge structures. This is purposefully speculative; the data in this study raise the question as to whether the critical examination of the knowledge which flows into schools from corporate spaces could be a focus for future research.

Alongside the use of external resources, knowledge was observed within the teaching community as teachers developed individual expertise in particular areas:

*'We're looking at linguistic phonics as a replacement to Jolly Phonics and a viable option to things like Read Write inc, which are very expensive for schools to buy and require a lot of upkeep, and there are pedagogical differences between sort of traditional phonics, of which I would include Jolly Phonics, Read Write inc, Phonics Bug, and all the rest of these, and linguistic phonics.'* (Promoted Post F)

This teacher, in a promoted post, was developing the approach to literacy across their school and drew on their own knowledge of literacy in doing so. As observed by a Headteacher, a shift towards local decision-making enabled schools to identify what was useful for the pupils in their classrooms:

*'And in the past we've tried tae pick up things because we felt that well it's coming at us like, you know, Government things. You know, like, you know, there, you know, it's coming at us so we have to do it. Whereas now we're much more choosy about well what, what are, what are, what does our school need, what dae our learners need? And we come from that point a' view rather than what is getting thrown at us and what dae we need tae look at.'* (Headteacher C)

This shift from 'things' 'coming at' the school to schools being able to choose what was appropriate shows not just what knowledge is coming into schools but how knowledge is

used when building or making the curriculum. This was different for different schools, as some were observed to be keen to stay up to date with new resources:

*'You know, the new, the latest writing guidance or the latest writing programme'll come out from one of these big, big publication companies and you see those schools being sucked into it. 'Oh yeah we need the latest thing, we need the, the best thing.'* (Teacher C)

As implied by the phrase 'being sucked into it' the influence of commercial providers 'big publication companies' could be met with a sceptical response, suggesting that the knowledge they provided was not valued by all teachers. It also reflects Keddie's [41] observation that schools are not all equal in their redistributive and material benefits.

Reflecting on these points leads us to consider the ways in which knowledge flows in and around schools. Fraser [7], discussing justice issues, observed a shift in the way issues of justice were framed in the era of globalisation: a move from the 'place of spaces' to the 'place of flows' emerges with the rise of globalisation and spread of digital technology in the 21st century. Whereas in previous eras, justice claims were easily bounded by the state, in the era of globalisation, the state becomes a porous boundary and justice issues such as poverty and climate change flow beyond country and state borders. If we apply this perspective to the redistribution of knowledge, we can observe how knowledge can flow into national curriculums from beyond state boundaries and influence the practice of teachers on a local level. The publishing companies which publish the Literacy and Maths schemes are not bound by national guidance and consequently create a dialectic as teachers adjust them to make them fit into the local context. If we take the view put forward by Zipin and Brennan that 'no knowledge is simply 'best for all' unvetted by valuations that are partial, not universal' [5] (p. 173) then the flow of knowledge from transnational corporations into the classroom is an issue of social justice if we acknowledge that the knowledge cannot be taken for granted as universal truth, that is not in some way value-laden. What the data above highlights is the potential for universal knowledge (that which flows beyond borders) to be accepted into the classroom without critique while teachers focus on the pupils and their needs, ensuring that they have the skills to access this knowledge. It is these structures which are brought into perspective when we apply Fraser's [7] social justice framework, and which previous research suggests we need to critique and question [31], as these structures can be embedded with inequity [31]. It highlights the complexity and challenge of teachers' work, work that is not bounded within a classroom, or even a national space but draws on global flows of knowledge. These flows of knowledge are also accessed through accessing the internet and engaging with social media, which both teachers and their pupils may regularly do, but consideration of this is beyond the scope of this research study. Next, we consider how decisions about knowledge are made as teachers make the curriculum in their schools and classrooms.

## 6.2. How Were Decisions Made?

Participants drew on the knowledge of their pupils to make decisions relating to the curriculum. This involved building relationships:

*'It has to be based on relationships. You have to get to know the children.'* (Promoted Post B)

*'Well for me it's always building relationships wi' the kids and making them be the best they can be.'* (Teacher D)

as relationships allow teachers and pupils to shape the curriculum together: 'I think that's what Curriculum for Excellence has allowed us to do, you know, we've got the outcomes there, but really take it where the children want to go and facilitate that for them.' (Rural Teacher D). This involved dialogue with the pupils:

*'The other part is very much about involving the children in that two, two way feedback and actually speaking with them and asking them about success criteria and learning intentions and making sure that it's not a guessing game.'* (Headteacher D)

This enabled pupils to engage and take ownership of their learning:

*'We have a big focus at [School name] on pupils taking ownership now of their learning, being assessment capable learners, so being able to, you know, assess their own work, assess their peers' work, speak just, you know, be very motivated to want to learn more, or want to get better at something without the teacher having to tell them all the time.'* (Promoted Post C)

This extract shows how pupils were positioned as central to decision making around the curriculum, with the discussion focusing on 'how' the curriculum was built and enacted. This extract also shows the influence of external knowledge as the mention of 'assessment capable learners' draws on the work of Hattie and Yates [60] and the Visible Learning approach, an example of knowledge flowing into the LA from outside. Decisions relating to what outside knowledge should flow into schools were made at a number of levels as participants discussed external providers, national provision, collegiate, professional groups, and LA resources, such as progression pathways—both within their own LA and from other LAs. The flow of knowledge into and around the LA school system was not always clear. Reflecting on this data, it is suggested that the redistributive aspect of curriculum knowledge is not straightforward. While arguments for 'powerful knowledge' [8] suggest that pupils are entitled to certain knowledge, the reality is more complex. Teachers are charged with navigating interconnected spaces, the local, the regional, the national and the global, as they engage with knowledge and make decisions related to curriculum. Knowledge is not accessed from a universal cannon; it is locally negotiated and actually, even if there was ever a 'universal' cannon of knowledge, the very structures which organise it are being challenged via postcolonial critiques [23]. Reflecting on this data set, we could ruminate that the complexity of knowledge work related to the curriculum is highlighted by the lack of clear evidence in relation to how decisions are made about it.

Content knowledge was noticeable in its absence across the interviews, as participants focused on the 'how' of curriculum making rather than the 'what'. This is reminiscent of wider discussions about learning in the 21st century [61]. The notion that the curriculum framework enabled teachers to build the curriculum around their learners and to adapt it to the local context was a theme that emerged across all the interviews. The curriculum was observed to be a framework or a guide.

*'The curriculum is there, but it's for us as professionals in order to be able to build, if you like, the capacity, in order to be able to manage it.'* (Promoted Post A)

*'The curriculum's there for you and that's basically your framework and that guides you through what you've actually got to teach. With experiences and outcomes certainly with your social studies and things like that we do have some freedom as to how you teach it in the context.'* (Teacher D)

The second quote here discusses the curriculum as a framework and in stating that it tells you 'what you've actually got to teach' suggests that decisions about content knowledge are made outside of the classroom, an opinion shared by other participants:

*'We've been given Curriculum for Excellence, we're given, you know, the outline of our experiences, and, that these children should be having and what that should look like in terms of outcome, so we are given that, so our job therefore is to ensure that they have those experiences in the best way possible, so thinking about the how, how things are delivered, as opposed to the what is delivered.'* (Rural Headteacher A)

Knowledge of the curriculum and of pedagogy were observed to be mutually constituting:

*'The curriculum supports the pedagogy and the pedagogy supports the curriculum, that there needs to be, you know, there needs to be both, you can't speak about one without the other almost.'* (Teacher A)



Although only a small number of participants explicitly mentioned pedagogy, the theme of the curriculum being a guide or framework, which teachers adapted for their classroom, suggested pedagogic knowledge was utilised.

The use of Literacy or Numeracy schemes and other external resources positions teachers in such a way that the decisions they make about the knowledge the curriculum redistributes are focused on ‘how’ the knowledge can be delivered rather than ‘what’ it is. They are delivering content designed outside of their frame of reference and fitting it into the curriculum. This could be seen to sit in tension with the focus on the pupil and recognition of their lives and values, which is evident in the data. Noticeable for its absence from the data is a discussion of the knowledge contained in the commercial resources or their content. A limitation of the methods could be that this question was not directly posed; we are not suggesting that this knowledge is missing, simply that it was not discussed in relation to decisions made about the curriculum. The focus on pupils, on making the curriculum in the classroom and on the curriculum framework results in a focus on ‘how’ teachers make the curriculum, with an implicit assumption that the resources they are drawing on for that will identify ‘what’ is in the curriculum unproblematically. In focusing on recognition, the redistributive aspect of social justice is potentially assumed, accepting the knowledge structures which inform the curriculum as unproblematic. While commercial resources may be designed and developed with altruistic intentions in relation to education, they are part of a corporate system which values financial capital and, in doing so, positions schools as customers. This reflects wider educational discourses which re-frame education [62], shifting it from a welfare right to a theory of human capital [63]. Neoliberal moves towards centralised control of curriculum or lesson banks are seen globally, presented as ways to address teacher workload but often resulting in a lack of consideration of the local context [6]. These approaches and the wider discourses they are embedded in are likely to be impacting the equity of participation of pupils and teachers.

Participants discussed the widening requirements of the curriculum, reflecting the broadening of teacher knowledge in the 21st century [32]:

*‘I think there’s much more emphasis on teaching children about healthy eating, about healthy relationships with social media, the effects on mental health of different, you know, all these things are becoming more part of what we need to make sure that children get, that maybe before weren’t as much of a priority.’ (Rural Headteacher A)*

*‘Having colleagues be thinking more broadly around subject areas, curricular areas, links, so we’ve kind of looked at the UN for guidance, you know, in terms of so where, where are the main, or what are the main challenges to the world is basically how we go, to humanity.’ (Promoted Post A)*

This leads to questions of ‘whose’ knowledge is valued in schools as teachers are not only drawing on their own knowledge of pupils, practice, and pedagogy to build the curriculum, but they are also looking outwards into society and globally at transnational organisations, such as the UN, for guidance on how to build the different areas of the curriculum.

At the school and classroom level, teachers were making decisions about how the curriculum was ‘made’ in their classrooms. In their agentic approach to shaping the curriculum, putting the learner at the centre, and amending external resources to fit with local expectations, teachers were represented in local decision making connected to the curriculum. This reflects their positioning within the Scottish policy context as ‘agents of change’ [31]. Reflective of their focus on recognising their pupils, this appears to position them as agentic in the process of curriculum making. The influx of commercial resources and the ‘top-down’ curriculum framework (teachers spoke of how they used it or were guided by it but did not critique it overtly or ‘talk back’ to it) highlights the traditional hierarchy of the education context in which national curriculum is enacted in local contexts. Local decisions about ‘how’ were made by teachers and headteachers,

and broader decisions about ‘what’ were made at a national or potentially transnational level. The redistribution of knowledge in the curriculum, the ‘what’ [7], was opaque in the interview discussions, noticeable for its absence from the general discussions. Reflective of Deng’s [64] observation that knowledge becomes invisible in the knowledge society, in focusing on ‘how’ the ‘what’ was not really discussed. While the local focus suggested active engagement with representation, this could prove problematic in terms of recognition as knowledge structures were flowing into local practice without critique or consideration of whose knowledge they recognised. Returning to Fraser’s [7] assertion that we need to critically question the procedures and enactments that proceed with what is statutory, consideration of the institutional and policy structures that teachers work in is important. The focus on teacher agency [24] and the positioning of the learner at the centre [60] enable teachers to ‘recognise’ their pupils locally by drawing on knowledge of them and the local context and building relationships. We observe that this is bounded by a national ‘place’, by Scottish policy and institutional structures. These policy and institutional structures, in their focus on teacher agency, aim to ‘recognise’ teachers’ work in curriculum making. But in the digitised world of the 21st century, we need to consider the ‘flows’ of knowledge as well, if we are to really understand the implications of teachers’ use of knowledge for social justice. When knowledge flows into the curriculum from beyond the ‘place’ in which it is situated, it influences the local institutional and policy structures, embedding values within these.

### 6.3. Whose Knowledge?

Riddle et al. [6], in their application of Fraser’s framework for social justice in the school curriculum, described ‘recognition’ [7] as valuing the lives of learners [6]. The data in this study suggests that this is a high priority for teachers in this LA. Recognising their learners’ interests, their community and their progression are central to practice in the classroom and knowledge of learners is a key knowledge source that informs curriculum making:

*‘It’s very much seeing where their needs are and that’s, that’s the difference and being reflective and being responsive towards what they need.’ (Promoted Post B)*

*‘We start with the child and we consider their world’ (Teacher C)*

This suggests a ‘bottom-up’ type of recognition as schools actively engage with their learning community. Teachers in this study aspired to recognise their learners and create a curriculum with them, but they were also bound by the expectations of the system and pupil’s progression within this. A variety of progression and moderation tools were discussed, both school-designed, local authority, and nationally designed. These provided expected routes through the curriculum and progression in a subject area. Those discussed in this research related to Literacy and Numeracy although a social sciences tool was mentioned by one teacher. Teachers talked about a progression pathway for Literacy designed by a different local authority. This suggested that the knowledge contained in the pathway about pupils’ progression through the curriculum, was potentially universal as pathways from other LAs could be used, but also that it was rooted in the local context as schools and LAs were designing their own versions. This presents an implicit tension between the local and the global as teachers discussed the importance of the local context and knowing individual pupils while accepting generic pathways of progression. If we consider the progression pathways from Riddle’s conception of recognition [6] in terms of valuing the lives of learners, we should consider the drivers of these progression pathways. On one hand, they are designed to support teachers in ensuring that all pupils progress through education in a meaningful way, reflective of their local context. On the other hand, they are potentially driven by wider universal conceptions of progression driven by transnational organisations such as PISA, in which subjects such as literacy and numeracy are valued above others, reflecting a hierarchy of propositional knowledge. The extent to which this implicit tension between local and global is problematic is, however, beyond the scope of this study. The challenges to Westernised knowledge structures [23], which we

mentioned earlier, open spaces for critical consideration of the knowledge structures which organise curriculums and opportunities to consider alternative perspectives or reflect on assumptions of progression.

## 7. Conclusions

This research has used Fraser's framework for social justice [7] to examine an empirical data set, offering a critical examination of the knowledge teachers are drawing on in their everyday practices of curriculum making. We highlight the complexity of this process and the challenges teachers face as they encounter multiple sources of knowledge and negotiate implicit and explicit tensions. Through our analysis of the data, which raises questions for further consideration, we observe the knowledge work which teachers carry out in relation to curriculum as complex. Teachers are tasked to navigate local, national, and global knowledge sources and to use these agentively to inform the way they make the curriculum in their classrooms. This finding is not new; it supports previous studies in this area [2]. What this study offers is a social justice framing which allows us to situate this complex work in the wider global context. Contributing to discourses which have examined the curriculum from a social justice perspective [5,6,20] we suggest that consideration of the ways knowledge comes into the school, from local and national places and via transnational flows, is important. The juxtaposition of these structures of knowledge, of vernacular and propositional knowledge, is not straightforward, but in its interweaving, it has the potential to impact the equitable participation of pupils in the process of schooling.

Teachers are observed to value place and context knowledge, whilst universal notions of progression and content persist. In considering the 'what', 'how' and 'whose' [5] of knowledge in relation to curriculum work we highlight key tensions which require careful negotiation at all levels of education. The focus on knowledge that supports teachers to engage with the 'how' of the curriculum moves their gaze away from the 'what'. National curriculums guide the 'how' of curriculum making while transnational organisations and commercial companies quietly contribute to the 'what'. Assuming that content is guided by a universal canon which can be drawn from a global space and adapted to a local one overlooks the value-laden nature of knowledge [5]. Teachers adapt 'universal' resources using knowledge of their pupils and their local context. Universal 'banks' of lessons potentially reduce the opportunity for authentic engagement with local places and support a narrowed focus on core subjects which also happen to be those measured by international comparisons of education systems. These reflect structures which privilege certain ways of knowing over others, bringing us back to Fraser's concept of recognition [7] and Keddie's assertion that schools are reflective of wider systems of disadvantage [41]. Schooling, speculating in relation to the data above and the social justice lens applied, is embedded within wider systems which promote conformity and value certain types of knowledge above others. As discourses which engage with the purpose of schooling frame education in terms of encounters with the world [34], with educational 'good' [63] and with engagement with alternative knowledge systems, it is important that the flow of knowledge into schools, and the systems that generate that knowledge are critically examined.

The tensions between local and global, between individual and universal, are unlikely to change quickly, but we would suggest that critical engagement and analysis, as presented here, can help to identify the structures and discourses which hamper the equitable participation of pupils and teachers in the process of schooling. It can perhaps nudge the system in a more equitable direction as it brings questions of knowledge into the frame, questions which acknowledge the complexity of questions of knowledge in education and the challenges of the work around this. Reminiscent of previous research [2,31,32] and reflected in this research study, we observe teachers as agentive agents in curriculum work. The ways in which they engage with knowledge as they build the curriculum is an important consideration for research, policy, and professional development.

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Appendix A. Overview of the Themes Generated from the Interviews

Headteachers: A, B, C, D  
Rural Headteachers: Ar, Br  
Promoted Posts (none in rural schools): A, B, C, D, E, F,  
Teachers: A, B, C, D, E, F, G  
Rural Teachers: Ar, Br, Cr, Dr

Themes		Headteachers	Promoted Posts	Teachers
Knowledge of Pupils	Pupils’ interests	A, B, C, D Ar, Br	A, B, C, D, E, F	A, B, C, D, E, F, G, Ar, Br, Cr, Dr
	Pupils’ learning	C, D, Br	A, C, E	G, Ar, Br, Dr
	Pupils’ progression	C, D, Ar, Br	A, B, C, D	G, Ar, Dr
	Data about pupils	A, B, C, Ar	C, D	D
Knowledge of Context	Pupils (beyond the classroom)	A, D, Ar, Br	A, D	C, E
	Parents and local community	A, C, D, Ar, Br	A, B, C, D, E, F	B, C, E, G Ar, Br, Dr
	Local area	C, D, Ar, Br	B, C, D, E	C, E
Knowledge of Teaching	Pedagogy	A, B, C, D Ar, Br	A, B, C, D, E, F	A, B, C, D, E, F, G, Ar, Br
	Practice	A, C, D, Br	B, C, E	E, F, Cr
Knowledge of Curriculum	Curriculum framework	A, Ar, Br	A, B, C, D, E, F	A, B, C, D, E, F, G, Cr, Dr
	Curriculum areas	A, B, D, Ar, Br	A, B, C, D, F	A, F, Br
	Content knowledge	D	F	Ar
External Knowledge	Resources (teaching schemes, etc.)	A, B, C, Br	D, E, F	A, C, E, F, G, Ar, Cr
	Experts	A, B, D Ar, Br	A, B, C, D, E, F	A, B, C, D, E, F, G, Ar, Br, Dr

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