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A *Blueprint for Rural Mathematics*: Connecting Social Space, Identity and Teacher Pedagogy

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Abstract

This paper reports on the development and use of a *Blueprint for Rural Mathematics* (herein referred to as the *Blueprint*) in a study of middle-primary mathematics teaching. The study presented a counter-narrative to the deficit discourse around rural education outcomes through an emic perspective of middle-primary mathematics on the Yorke Peninsula, a rural district in southern Australia. This study defined 'rural' as a sociological and geographical phenomenon. It takes a sociological stance acknowledging the situatedness of the rural and the social and cultural uniqueness of the people and their communities. Geographically, the rural locations in this study were those distanced from, and outside the commuting zone of, large urban areas and major cities. This study claimed that rural schools of Yorke Peninsula are unresearched, under-theorised and underestimated in their teaching of mathematics. Hence, very little was known about the experiences of the Yorke Peninsula teachers or the pedagogical practices they employed in their mathematics teaching. Yorke Peninsula people have an identity of deficit imposed on them with no opportunity to negotiate it. In understanding and addressing the accuracy of this pervasive negative framing, this study investigated Yorke Peninsula teachers of mathematics. It concluded that the rural social space, the identity of its members, and teacher pedagogy are essential considerations in mathematics teaching. The *Blueprint* provides a framework to explore these key components of rural education.

Keywords: *Rural; mathematics; social space; identity; teacher pedagogy*

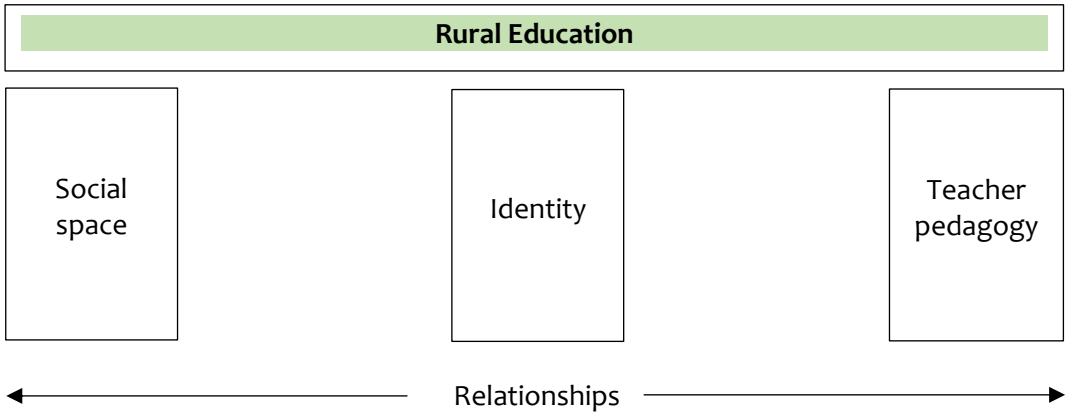
Introduction

Rural students worldwide, including in Australia, are consistently reported from a deficit discourse and as achieving English and Mathematics outcomes lower than their urban counterparts according to standardised assessment results (Australian Curriculum and Reporting Authority, 2019; Thomson et al., 2020; Thomson et al., 2021). Rural research has typically ignored the issue of the metrocentric urban approach (Corbett, 2015), an approach which does not consult with rural people, nor acknowledge the specific strengths and needs of the rural learner and community. A substantial amount of mathematics education research has used the

mathematics achievement gap as a lens to compare differing groups of students. Doing so, Gutiérrez (2008) believes, perpetuates negative deficit narratives, normalises low achievement of specific groups and their comparison to others, fails to recognise that low scores on standardised tests mirror discrepancies in opportunities and life chances of students from different backgrounds, and ignores the identities of students. Framing rural learners from a negative stance ignores their identity and context. This framing of the rural learner is from a narrow view—from data gathered about them rather than from asking the rural people themselves. An alternate approach going forward requires educational governance with a focus on "*enhancing local voice and agency, while enlarging democratic power*" (Howard et al., 2020, p. 2). This alternative requires a focus on equity (Baroutsis & Lingard, 2017). With a dominance of mathematics education research into issues of access and achievement, Gutiérrez (2008) calls for researching issues of identity and power as there is little recognition of the linguistic and cultural resources that marginalised students bring to the classroom and to the discipline of mathematics. These recommendations for rural research to engage the identity and voice of rural people within an equity frame influenced the direction of this study.

This paper argues for three core components to be considered to understand rural education, namely: the social space, the collective identity of its members, and teacher pedagogy. A *Blueprint for Rural Education* is presented diagrammatically in Figure 1. The *Blueprint* is an original framework which was designed for use in the author's doctoral thesis (Morphett, 2022) in which it was called the *Blueprint for Rural Mathematics*. Each of the *Blueprint's* three core components are placed in a way to represent pillars signifying that each component is a foundational requirement in understanding rural education. This proposed conceptualisation is underpinned by relationships. The *Blueprint for Rural Education* prioritises the sociocultural aspects of rural communities as important. Hence it is based on an underlying belief that any decision, debate, or curriculum and policy development involving rural education requires consideration of the social space, the identity of its members and the relationships which exist among them, and the teacher pedagogy in use. The development of the *Blueprint* as an analytical tool provides a significant contribution to new knowledge in the scholarship of rural education. This paper suggests educators, educational jurisdictions and policy and curriculum writers, and researchers in their methodology and theory would benefit from using the *Blueprint*, and its core components, in their respective work.

Figure 1: ***A Blueprint for Rural Education***



In the following sections, each component is theorised, followed by a discussion around the use of the *Blueprint* as a framework for theorising rural mathematics in the doctoral study.

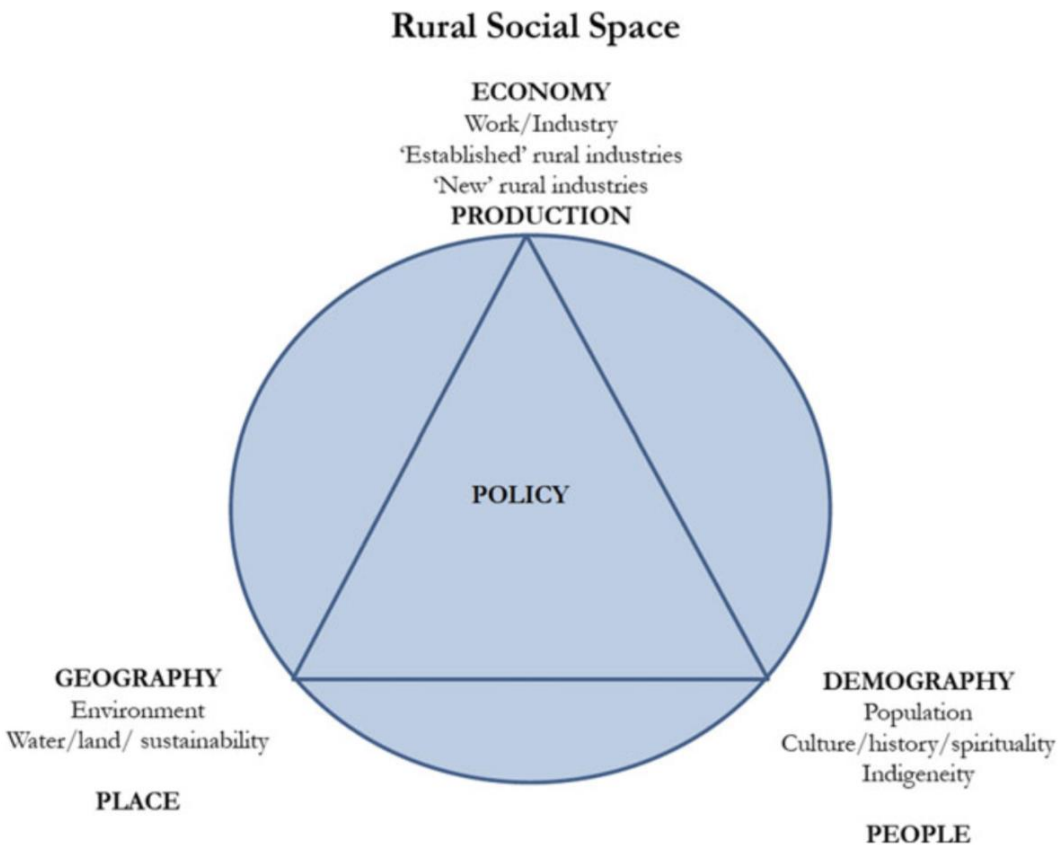
Theoretical Framework Underpinning the *Blueprint*

Social Space

For Bourdieu, social space is a metaphorical construct (Green & Reid, 2021), "*an interaction of field and habitus, which produces and reproduces itself in accordance with the capitals that define it*" (Reid et al., 2010, p. 270). In this sense, the symbolic violence inflicted on rural communities by naming them as 'deficit', 'behind', 'hard to staff' and so on, continues to reproduce and shape the social field in that way and is realised in the habitus of rural students (Green, 2012). Bourdieu describes habitus as "*transposable dispositions*" (Bourdieu, 1990, p. 53) and "*a way of being, a habitual state*" (Bourdieu, 1977, p. 214)—a construct of dispositions within oneself (Corbett & Roberts, 2017), but also those adopted from the outer social space (Green & Reid, 2021) and structured by one's circumstances (Maton, 2014). The Rural Social Space model was developed to challenge the prevalent construction of rural within a deficit discourse (Reid et al., 2010). Reid et al. (2010) conceptualise rural places by the social space which is created within them, and in doing so borrow the definition of rural from Donehower et al. (2007) as including not only geographic and quantitative demographic factors, but also social and cultural aspects encompassing the lived experiences and interactions of rural people in their community (Green & Reid, 2021). The Rural Social Space model aims to challenge stereotypes of rurality and to instead highlight the complexities, realities and advantages of rural places (Green & Reid, 2021; Reid et al., 2010). Rural Social Space additionally sees the daily practices of rural people as pivotal in producing their social space and hence includes the relationships and daily 'doings' that occur among its people (Reid et al., 2010). These social practices in-turn also contribute to the habitus of rural children and adults.

Within the Rural Social Space model, policy is given prominence, acknowledging the way government policy governs the practice of a social space (Green, 2012). This prominence is important as policy has never truly considered the complexities of rural places or what it is like to live and teach in them (Green & Reid, 2021). As pointed out by Green (2008), "*there is little understanding of social space in regard to either rural policy or pedagogy*" (p. 5), highlighting the need to 'know' a rural place. Knowing a rural place, or coming to know a place, is essential in ensuring the relevance and connectedness of the curriculum that will be designed and in the choice of pedagogy teachers adopt (Green, 2012). Knowing a place involves valuing the forms of social and symbolic capital that exist specifically there, which requires using the resources of the people who know (Green, 2012). The Rural Social Space model provides a way to 'know' but as Green and Reid (2021) caution, it cannot be used as a quick overview of a social space but rather requires one to critically interact with each dimension to develop a deep understanding and knowledge of a social space. As such, the Rural Social Space model embraces the differences amongst rural people and the differences between rural communities. The model also incorporates the interrelated dimensions of geography, demography and economy seen at each corner of the central triangle of Figure 2. To understand a specific place, the model allows exploration of its geography and all aspects of its environment from a sustainability standpoint, its economic aspects including the local industries, and the local demographics of which indigeneity is a significant feature. However, a limitation is that the model does not specifically include identity as a feature.

Figure 2: ***Rural Social Space***



Note: Originally reproduced from Green and Reid (2021) with permission from original source (Reid et al., 2010).

Rural Social Space can assist in developing a sociological understanding of a particular rural context by consulting with, asking, and being guided by, the residents of that community (Lockie & Bourke, 2001). However, rural people are rarely consulted on matters which affect education in their community, resulting in decisions being made for them, without their voice (Morphett, 2022). Whilst research shows that developing knowledge of a rural community and its people, geography and economy requires building extensive interpersonal relationships over time (Fuqua, 2019), less is known around the inclusion of aspects of the identities of its people. Developing an understanding of a rural social space requires engaging with its members over time to gain knowledge not only of their lifeworld, but also their identity. Hence, identity is seen as integral to the *Blueprint*.

Identity

Human lifeworld is "*the lived world as experienced in everyday situations and relations*" (van Manen 2016, p. 101). Alfred Schutz believed an individual has their own lifeworld which he described as "*the taken-for-granted 'common-sense reality' of the social world as it is lived by the ordinary individuals*" (Harrington 2006, p. 341). Edmund Husserl's work defined lifeworld as consisting of not only an individual's beliefs of self, their objective world and that of others, but also as the social, cultural and evolutionary construction of meanings by a community of people who share a common lifeworld (Beyer, 2016). Hence, each person may have multiple lifeworlds dependent on how they are situated historically, culturally and socially. Lifeworld, then, can be seen as the social reality of both an individual and their community. Husserl's inclusion of beliefs

about oneself broadens the lifeworld to also include one's identity. The role of the lifeworld is important in knowing the people and community of a social space and their identity.

The term 'identity' has been defined and conceptualised from differing theoretical perspectives. From a sociocultural perspective, identity is seen not only as 'within' but as situated and negotiated, and as co-constructed through interactions with others (Fellus, 2019), formed from the sum of one's lived experiences of the social, cultural, historical and geographical world (Esteban-Guitart, 2019). As argued by Farnsworth and colleagues (2016), identity refers to how we see ourselves and how others see us, in other words, "*[b]eing recognised as a certain kind of person*" (Gee, 2000, p. 99) by self or others in a given context. Thus identity incorporates "*stories about a person*" (Sfard & Prusak, 2005, p. 1), both one's own narrativisation and that told by others. This implies a belonging and connectedness to the social world and its communities. Hence identity is closely linked to community (Esteban-Guitart, 2019; Gee, 2017; Sfard & Prusak, 2005). However, the identity of a community and its members as told by others needs to be accurate.

The early work of James Gee described four perspectives from which to view one's identity and what it means to be recognised as a certain kind of person—by nature, institutions, discourse, and affinity—any or all of which can be attributed to people who in turn can accept or refuse being recognised in that way (Gee, 2000). Accepting or rejecting an identity requires negotiation and socially positioning oneself, and being positioned by others in a certain way, which may result in one's own view of their identity differing from that which is attributed by others. Identity as both a social and individual construct can be likened to one's habitus (Pearce & Morrison, 2011), such as, when the rural mathematics learner is reported in deficit terms as being behind their urban counterparts; it imposes on them a label which is unable to be negotiated. In this case there may be disparities in the discourse around the mathematics identity and the abilities of the rural learner. Gee's later work distinguished further between activity-based identities where a person freely chooses to participate in some kind of activity and its associated social group, and relational identities where labels are assigned by others, again to be either accepted or rejected (Gee, 2017). However, relational identities such as culture, class, family, and age are generalised, imposed categories which contrast people in relation to others – comparing rural students to urban, for example—where doing so often results in people being labelled and/or stereotyped (Deaux, 1993). Labelling people with a relational identity often results in any difference within the group not being seen nor one's individuality or "*lived reality and diverse experiences*" (Gee 2017, p. 88). Therefore, it is important to consult communities and their members about their own identity and to challenge the imposed identity of the rural mathematics learner presented in the media.

Given that identity involves one's social interactions in daily life (Moulton, 2018), it can be considered an essential link between learning and a student's sociocultural context (Hedges, 2020). Funds of Identity is an approach which recognises aspects of a learner's identity as valuable resources which teachers can use to connect curriculum and learning experiences to the lifeworlds and identities of the learner (Esteban-Guitart, 2019). Developed in 2010 by Esteban-Guitart, the Funds of Identity approach is driven by an equity agenda (Esteban-Guitart & Moll, 2014a), to overcome deficit thinking around marginalised groups by using ethnographic methods to gather information of a student's sources of identity (Subero et al., 2017). Funds of Identity is underpinned by Vygotsky's social theory of learning (Esteban-Guitart, 2019) and Bourdieu's sociology (Black et al., 2019). Funds of Identity identifies five main sources—or funds—of a student's identity (Esteban-Guitart & Moll, 2014a), that provide a set of resources or "*box of tools*" to help define oneself (Llopart & Esteban-Guitart, 2017). These funds are:

- social (significant people important in one's lived experience)
- institutional (structures and mechanisms of social order)
- geographical (land, regions, landscapes)

- cultural (symbols, tools, social categories)
- practical (activities, interests, hobbies) (Esteban-Guitart 2016).

The Funds of Identity approach builds on the work of both (Moll et al., 1992) and Bagnoli (2004) to include the identity experiences and perspectives of the students as a valuable resource for learning (Esteban-Guitart, 2019) which can be used by teachers to inform their pedagogical choices and to facilitate contextualised teaching and meaningful learning (Subero et al., 2018). By identifying aspects of the local lifeworld (Poole, 2016) and of a student's identity, the curriculum content can be linked to a student's lived experience and context (Esteban-Guitart & Moll, 2014b). To do so requires that a teacher know and understand their students' identities. Specifically for mathematics, Boaler (2002a) prioritised student identity in her description of mathematics learning as the interrelationship of disciplinary knowledge, the pedagogical practices used, and a student's identity and relationship with mathematics. Boaler's research, although not specific to rural contexts, showed disparities between students developing identity as a person and as a mathematics learner, highlighting the need for teachers to contextualise students' mathematics learning by connecting mathematics content, their pedagogical practice and the identities of their students (Boaler, 2002b). In doing so, students see mathematics as "*integral to their lifeworld beyond the classroom*" (Grootenboer & Zevenbergen, 2008, p. 247). Using Funds of Identity to contextualise the curriculum is particularly useful in engaging students and "*legitimating their lifeworlds*" (Cummins & Early; Tharp et al., cited in Llopart & Esteban-Guitart 2017, p. 258). Given this, Funds of Identity is appropriate for use in rural contexts such as the one in this study. With a call for research and empirical results needed to show the impact of using the Funds of Identity approach (Esteban-Guitart, 2019), this study goes some way in showing how Funds of Identity can be used in research in a rural context.

Teacher Pedagogy

Pedagogy can be described as how content is taught and assessed (Reid, 2018). Further, Alexander (2004) defined pedagogy as "*the act and discourse of teaching*" (p. 8) which encompasses:

> *… the act of teaching together with its attendant discourse of educational theories, values, evidence and justifications. It is what one needs to know, and the skills one needs to command, in order to make and justify the many different kinds of decisions of which teaching is constituted. Curriculum is just one of its domains, albeit a central one (p. 11).*

In addition to curriculum, Kerkham (2012) argued that pedagogy is concerned with the "*situated nature of teaching and learning and with what is taught, how it is taught and how it is learned*" (p. 95), and hence that pedagogy is relational, and emerges dialogically through the interactions and relationship between the teacher and student. This teacher–student relationship is central to education and a key factor in student learning (Aspelin, 2014; Ljungblad, 2019). With a future-focused curriculum and pedagogy, teachers are seen as curriculum and learning designers (Reid, 2018) who use their professional knowledge to choose from a 'toolkit' of approaches appropriate to their students, the content, and the context. Choosing from a repertoire of pedagogy requires knowing what is appropriate for students in a given situation (van Manen, 2016) and which pedagogies are appropriate to meet their needs (Stanley, 2008), their cultural backgrounds and for specific domains of knowledge (Stanley, 2008; Luke, 2006).

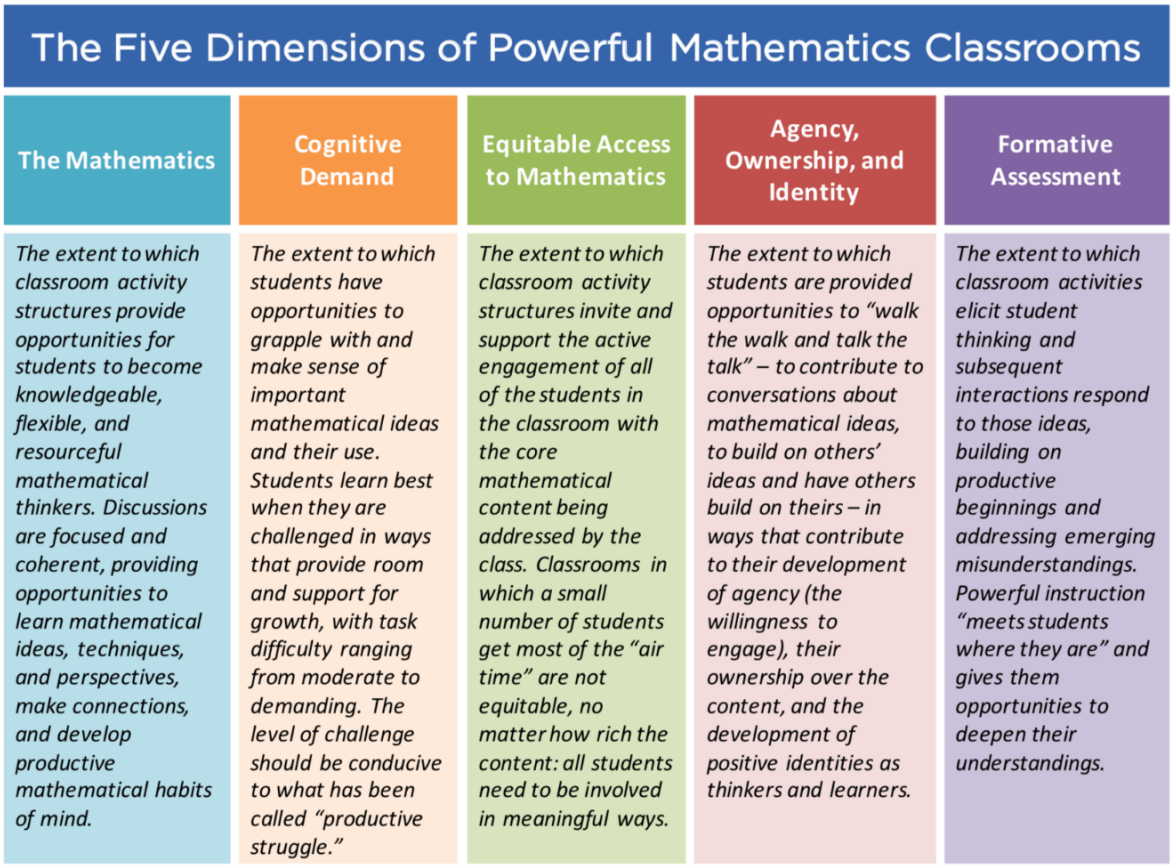
Dominant opinion is that effective pedagogy, applicable to all domains including mathematics, involves that which is personalised and self-paced, accessible and inclusive, collaborative, lifelong and student-driven (World Economic Forum, 2020). Effective pedagogies are those which involve open, complex and authentic tasks which are problem-based, project-based or inquiry-based, which connect to the wider world, which involve scaffolding to address issues of equity (Paniagua & Istance, 2018). Fundamental to all such pedagogies, is that teachers hold high expectations for all students (Stanley, 2008). Socioculturally informed pedagogies include

culturally responsive pedagogy (Gay, 2018; Ladson-Billings, 1995; Morrison et al., 2019), place-based pedagogy (Cuervo & Wyn, 2012; Gruenewald, 2003; Somerville et al., 2012), and critical pedagogy (Freire, 1970; Giroux, 2020; McLaren & Giroux, 1990). Culturally responsive pedagogies are those which address social inequities and sociopolitical issues (Ladson-Billings, 1995), reject a deficit discourse by viewing diversity as an asset, connect learning to student lifeworlds, and "*value, and mobilise as resources, the cultural repertoires and intelligences that students bring to the learning relationship*" (Morrison et al., 2019, p. v). Place-based pedagogy acknowledges that "*places are pedagogical*" (Gruenewald, 2003, p. 619)—as seen in 'both-ways' education with its philosophy of country as classroom and its blend of Indigenous culture and language with western numeracy and literacy (The Living Knowledge Project, 2021). Place-based approaches to mathematics teaching recognises that although the mathematics is the same universally, the way in which it is approached is different from place to place (Showalter, 2013). By contrast, critical pedagogy is more concerned with education as political and as sites of social change.

Mathematics also requires domain specific pedagogies (Paniagua & Istance, 2018) where teachers have a positive attitude toward mathematics, and have deep content knowledge and pedagogical content knowledge (Anthony & Walshaw, 2009). Broad agreement prioritises mathematics pedagogy which develops knowledge, proficiencies and capabilities, with a belief of mathematics learning as socially situated. Underpinned by constructivist and sociocultural perspectives, practices recommended for effective mathematics learning include: collaboration and relationships; making connections; contextualised learning; embedding proficiencies and critical thinking skills within mathematics learning experiences; inquiry, investigations and open-ended tasks; explicit instruction; scaffolding; challenging tasks; differentiation; and, student assessment. Further, in their review of Australasian studies which have explored powerful mathematics pedagogical practices, Hunter et al. (2016) reported that effective mathematics classrooms focus on social aspects of learning including positive discourse, student dialogue and sharing of thinking, and being culturally responsive by linking learning to students' lifeworld—their social and cultural context, experiences and interests with real-world applications. Incorporating student lifeworld involves contextualised learning by incorporating students' resources in their teaching of mathematics (Aguirre & del Rosario Zavala, 2013). Aspects of a student's identity such as their interests are important resources for contextualising mathematics, with interest-based learning recognised as an effective pedagogy in enabling academic engagement (Azevedo, 2013; Rosicka, 2016). Contextualising learning to the lifeworld of the student requires teachers to know aspects of the identity of the student and their wider community, and of local knowledges (Subero et al., 2018). Combining disciplinary content knowledge with life-based knowledge where students, families and local community members share their cultural ways of knowing can assist to "*make the community curricular*" (Zipin, et al., 2012, p. 183). Zipin (2020) suggested doing this by incorporating a student's geographic context, their family, and local community members in the learning program.

The *Teach for Robust Understanding of Mathematics* framework was developed after an extensive literature review of aspects of powerful mathematics instruction including existing frameworks and known pedagogical practices (Schoenfeld, 2018). The *Teach for Robust Understanding* framework specifies five dimensions identified in research as imperative for mathematically powerful learning, and stated that effective mathematics classrooms are those which adopt pedagogical practices which attend to these five dimensions. As seen in Figure 3, these dimensions are: 1) mathematics content; 2) cognitive demand; 3) equitable access to content; 4) student agency, ownership and identity; and 5) formative assessment. Classrooms that do well in each of these five dimensions in their pedagogical choices produce mathematics students who are knowledgeable and powerful thinkers and problem solvers (Schoenfeld, 2014; Schoenfeld et al., 2019). The first of these dimensions is content-based with the remaining four focused on how the learner experiences the discipline of mathematics (Schoenfeld & the Teaching for Robust Understanding Project, 2016).

Figure 3: ***The Teach for Robust Understanding of Mathematics Framework***



Note: Reproduced from Schoenfeld and the Teaching for Robust Understanding Project (2016, p. 1) with kind permission from A. Schoenfeld in 2023.

Little research has explored the mathematics pedagogy in use in the social context of rural schooling, particularly in light of students' rural context and rural identity. A unique feature of the *Teach for Robust Understanding* framework is that it draws specific attention to issues around equity and access to mathematics. This was particularly useful to this study given the unique challenges faced by schools in rural locations. Learning about and getting 'to know' a rural community through consultation and asking its members, requires adoption of an ethical framework (Poole, 2017). The ethically-based *Teach for Robust Understanding* framework is useful for this purpose.

Methodology

Methodologically, this study pursued a sociocultural framing in its recognition of a social purpose of education and that mathematics learning is inherently socially situated. To gain insight from rural teachers, the research methodology adopted two phases of data collection across a six-month period—a Phase One mixed-method survey of Yorke Peninsula middle-primary teachers, and a Phase Two multi-method case study of one school. The merits of this methodological design were realised by engaging participants' voices from across the entire Yorke Peninsula district. The study gained ethical approval (protocol 201831), and the authors acknowledge the Commonwealth Government's contribution through an Australian Government Research Training Program Scholarship, and the contribution from UniSA of the Rural and Isolated Scholarship.

The mixed-method survey was offered to all Yorke Peninsula teachers of years 3-6 middle-primary mathematics (n=70) in all 17 Yorke Peninsula schools and received anonymous responses (n=22).

The analysis found that Yorke Peninsula teachers are teaching in complicated environments involving a complex and diverse student population, and where they are constrained by a significant lack of access to elements critical for their effective teaching of mathematics. Findings of the survey were presented under three main themes—lack of access, contextualised and relational pedagogy, and knowing students well.

The Phase Two case study involved two teachers and an Education Support Officer in one school—Golden Fields Primary School (a pseudonym)—a small rural school situated in a coastal town on Yorke Peninsula. Physically, the school's location is described as moderately accessible according to the Accessibility/Remoteness Index of Australia (ARIA), and as outer regional by the Australian Statistical Geography Classification Remoteness Structure (ASGS-RA) (Australian Bureau of Statistics 2018). Methods used to explore the experiences of these teachers and the mathematics pedagogy they adopt included interviews, focus groups, document analysis and classroom observation of a unit of work on four days a week over a three-week period. The first teacher designed a unit of work around a House and Land Measurement assignment, whilst the second teacher designed a Sports Day unit which integrated time, data, money and chance. These units of work were complemented by observations of numeracy presentations by six community members at the school's mathematics Guest Speaker Day which was organised by the Education Support Officer. The case study methodology had sound validity particularly due to the extensive site visits and broad range of methods employed. However, it is acknowledged the case study relied on the dialogue and opinions from adults—teachers, principals, Educational Support Officers and community members. This limitation suggests future research may benefit from the voice of the parents and students themselves which would be a valid inclusion.

Initial thematic analysis revealed the two middle-primary teachers provided contextualised mathematics where students worked collaboratively on differentiated, investigative tasks which were supported by scaffolded explicit instruction. Additional opportunities for rich mathematical experiences were supported by parents and members of the wider community through *Electives* and *Integrated Studies* where mathematics was used in real-world areas of interest to the students, for example, fishing, cooking, design and technology. Thematic analysis was followed by a meta-analysis using the *Blueprint for rural mathematics*. This study adopted the recommendation of White (2015) to use Rural Social Space as part of a triad of theoretical tools, and hence is innovative in building on the theoretical underpinnings of the Rural Social Space model by combining it with Funds of Identity and *Teach for Robust Understanding*. Thus, the *Blueprint* was used as an analytical tool to theorise the rural social space of the Yorke Peninsula and the identity of its members as it relates to the mathematics learning of its students. Whilst Esteban-Guitart (2016) acknowledged the limitations of the Funds of Identity approach in generalising the diversity within a group, this study constructed a collective identity of the Yorke Peninsula people using examples where teachers, the Educational Support Officer, students and community members showed their personal connection to the Yorke Peninsula and to their mathematics teaching and learning. Use of the *Blueprint* for this meta-analysis identified three dilemmas Yorke Peninsula teachers face in creating optimal conditions for teaching and learning mathematics in rural schools given the constraints they face: (1) metrocentric policy dominance; (2) curriculum which excludes the rural context and identity with no guidance on how to make it relevant; and, (3) meeting the needs of the rural mathematics student.

Adopting the *Blueprint* for the meta-analysis allowed for theorising the data from three differing perspectives—social space, identity, and mathematics pedagogy. Doing so assisted in understanding some of the complexities faced by the rural middle-primary mathematics teacher and learner and was useful in developing a positive discourse by prioritising their context and identity as important. An additional purpose of using multiple conceptual frameworks in this study was much like that adopted by Wolf (1992)—to counteract the researcher's insider bias. The use of the *Blueprint* for the meta-analysis provided new insights into how the rural context

and identity are essential considerations in teacher pedagogical choice in mathematics learning of the rural student.

Discussion of the *Blueprint for Rural Mathematics*

Research has emphasised a need for a social construction of rurality and the importance of students' context in their learning (Halfacree 1993; Coladarci 2007; Green 2012). Indeed, constructivism and sociocultural theory inform many mathematics pedagogical practices which are recommended in scholarly research. However, limited scholarship has explored the need to consult rural people in order to understand aspects of their social space, lifeworld and identity to assist in designing relevant and appropriate mathematics teaching and learning. The *Blueprint* was designed for this specific purpose.

In conceptualising the *Blueprint*, Morphett (2022) drew on the literature previously discussed to create the framework. By bringing together the three components of social space, identity and teacher pedagogy which each have their own theoretical underpinnings, the sociocultural aspect of rural communities is prioritised. This assumes an epistemological stance of valuing the local knowledges of rural students. Morphett's (2022) use of the *Blueprint* drew on Reid et al.'s (2010) Rural Social Space model for the first component, and its three key elements of geography, demography and economy. However, whilst the Rural Social Space model prioritises all three elements as important in understanding a rural space, scholarly research which has utilised RSS had not yet explored rural people's identity in tandem with Rural Social Space. Therefore, as identity is a central focus of sociocultural theory (Grootenboer et al., 2006), the *Blueprint's* second component of identity adopted Esteban-Guitart's Funds of Identity approach to investigate the collective identity of Yorke Peninsula residents. The *Blueprint's* third component of teacher pedagogy applied the *Teach for Robust Understanding* framework to explore the pedagogical practices adopted by Yorke Peninsula teachers of mathematics.

Each of these three components individually provided avenues for viewing the rural mathematics learner in positive terms, and collectively prioritised the importance of aspects of a student's lifeworld in their learning, including their social context and identity. Each component's ability to counter the common deficit thinking of the rural mathematics learner was useful in theorising the dilemmas faced by rural mathematics teachers and learners and the possibilities for their future. The *Blueprint for Rural Education* allows freedom for others to choose alternate conceptual frameworks for the components of social space, identity and teacher pedagogy applicable to the specific needs of their work.

The use of the *Blueprint* provided a detailed insight into the relationships between the Yorke Peninsula community, its social space, the collective identity of its residents, and the mathematics pedagogy adopted by middle-primary teachers. The meta-analysis guided, by the *Blueprint,* found that whilst compliant with accountability and system requirements, teachers chose to prioritise the teaching of mathematics in ways that cater for the needs of their students, and which involve their rural context and identity, despite metrocentric policy and curriculum. *Knowing students* is paramount in providing appropriate mathematics for meeting the needs of rural students. Knowing students requires dialogue—asking and listening—all of which is reliant on solid student–teacher relationships having been established. The meta-analysis highlighted that Yorke Peninsula rural teachers are teaching mathematics in ways which do not reflect the common depiction of rural difference as deficit and recommended that the voice of rural people be heard; highlighting that knowing the rural context and the identity of its people is paramount in viewing both in positive terms.

The development of the *Blueprint* offers a contribution to theory in rural mathematics studies by calling attention to the interrelated roles social space, identity and pedagogy play in teaching rural mathematics. As an analytical tool, the *Blueprint* is offered for use by educators, educational

jurisdictions, and policy and curriculum writers in their respective work. Additionally, the *Blueprint* is a tool offered for use by future researchers such that, when multiple studies using the *Blueprint* have been conducted in different but related contexts, collectively their contributions to knowledge could be substantial, extending beyond this initial, yet innovative study.

Conclusion

This paper discussed the theoretical underpinnings of a *Blueprint*, and its potential as both a conceptual and analytical tool. The *Blueprint* broadens the definition of rurality by drawing on the components of social space, identity and teacher pedagogy—its framework contributing to the theoretical underpinnings of rural mathematics.

The study contributes new methodological and theoretical knowledge as a result of the development and use of the *Blueprint* as an analytical framework. Using the conceptual tools of the Rural Social Space model, the Funds of Identity approach, and the *Teach for Robust Understanding* framework for each of the three components of the *Blueprint* was key to theorising the Yorke Peninsula rural social space, the identity of its members, the pedagogy in use by Yorke Peninsula teachers of mathematics, and ultimately what is happening in rural mathematics classrooms on Yorke Peninsula. The use of the *Blueprint* models a new approach in furthering an understanding of mathematics practice in rural classrooms. The *Blueprint* is both conceptually and analytically innovative and can support educators, policy writers and researchers in their work. Not only can the *Blueprint* be used for future mathematics research in rural contexts, it can also be adopted for other contexts. Further, whilst the *Blueprint* has a significant emphasis on mathematics, the components of social space, identity and teacher pedagogy are key considerations for future rural research in other disciplines.

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