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Disrupting Perception: Mapping An Understanding Of Educational Attainment

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Abstract

Educational attainment is widely recognised as a 'wicked' problem in Australia for which a range of interventions have been developed. The North West of Tasmania is a rural and regional community, which has been a focus for such interventions due to its relatively low rates of retention to Year 12 and low tertiary participation rates. This paper seeks to move beyond narratives of deficit through a project aimed at exploring and representing the scope and range of activities undertaken in the region to address and support educational attainment. We begin with the question: '*How can communities, perceived to be deficit models, be provided with evidence of activities aimed at impacting educational attainment in a meaningful way?*' We used concept mapping to re-present the variety, type and audience of activities in the region. Concept mapping provided a means of processing a dynamic assemblage of data to represent existing work and to explore possibilities. This process disrupts deficit discourses and enhances stakeholders' knowledge of educational attainment in the region and invites future mapping and more complex understandings of ongoing cultural change.

Keywords: educational attainment, concept mapping, culture, community

Introduction

Educational attainment in Australia is understood to be the highest level of education a person has achieved in any field of study or educational institution (Australian Bureau of Statistics [ABS], 2016[1]). Addressing low levels of educational attainment is a priority issue for the Australian government, and for this reason, the topic attracts research interest and funding. Educational attainment is a multifaceted and complex issue, or a wicked problem (Rittel & Webber, 1973) highly resistant to resolution (Australian Public Service Commission [APSC],

[1] In May 2016, a quarter (25%) of people aged 15 to 74 years reported their highest educational attainment as Year 11 or below and 18% reported Year 12 or equivalent. A further 18% had a highest level of attainment of a Certificate III or IV, 17% had a Bachelor degree, 2.8% had a Graduate diploma or Graduate certificate and 5.5% had a Postgraduate degree. Two-fifths (41%) of people in the ACT had a Bachelor degree or above as their highest level of educational attainment, the highest proportion of all states and territories. The proportion of people aged 20 to 64 years with Year 12 or equivalent has increased from 53% in 2006 to 66% in 2016. (Education and Work, Australia, May 2016, http://www.abs.gov.au/ausstats/abs@.nsf/mf/6227.0)

2007, p. iii). Tasmania is classified by the ASGS[2] as regional or remote. It has the lowest rate of Year 12 attainment of any Australian state (ABS, 2014b). Similar to other locations in rural Australia (Webb, *et. al.*, 2015; Zipin, Sellar, Brennan, & Gale, 2015), Tasmania's North West is often cited in the popular press and in policy discourse as a problem space and a locus of educational underperformance, disengagement and low aspirations (Brennan, 2005; Corbett, 2016; Corbett & Forsey, 2017; Hawkins, 2014; Zipin et al., 2015).

The CREATE North West project was undertaken by researchers from the University of Tasmania with the aim of understanding the context and activity systems in North West Tasmania that relate to educational attainment. Community stakeholders wanted to know more about the success and coherence of their efforts to address educational attainment and how they might enact cultural change in the region. We asked: 'How can communities, perceived to be deficit models, be provided with evidence of activities aimed at impacting educational attainment in a meaningful way?'

Our aim was to provide the community with a picture of existing educational interventions, support programs and activities as well as an understanding of where gaps and opportunities remain. Early meetings with stakeholders resulted in the formation of six more refined questions that formed the basis for our research:

1. What are the aims and audience of the activity?
2. Who is doing what and where?
3. What are the outcomes and impact and /or success of the activity?
4. Under whose auspice is the activity operating?
5. What is the planned longevity and focus of the activity?
6. Is the process being evaluated, by whom, and using what measure/s?

In this paper, we discuss the method used to explore and re-shape these questions, and map the landscape of educational interventions and support programs and activities in the region through concept mapping. This method provided a way to process the combined, dynamic assemblage of data, to represent it visually and to open the process up for ongoing re-inscription. We then interrogate the map, as a tool for visualising activities/programs that support educational attainment in the region in relation to the available literature.

Perceptions about educational attainment in Tasmania

The Australian Qualifications Framework (AQF) provides the classification for educational attainment which assists the measurement of the stock of available skills in a community. Such measurement enables policy-makers to monitor the supply and demand for skilled personnel and to plan future educational focus (ABS, 2014b). It is generally acknowledged that attainment relates directly to health, economic and employment outcomes, and Tasmania is frequently prominent in the national discourse relating to challenges in this area. This discourse is situated in human capital assumptions that posit education as a 'private good' which improves the life chances and opportunities of individuals, but also contributes to the collective store capital which is necessary for entire societies and economies to advance and grow in contemporary economic conditions (Becker, 2009). In this respect, the production of

[2] ASGS (Australian Statistical Geography Standard) is the geographical framework used by the ABS since 2011.

knowledge itself is seen as a crucial commodity. Educational levels in variously scaled geographies from around the world, from the globe down to the individual, can be constituted as a quantifiable form of capital (Corbett, 2007) to be used for comparison, monitoring, surveillance and ultimately disciplining of workforces aimed at their improvement (Lingard, Martino, Rezai-Rashti, & Sellar, 2015; Rizvi & Lingard, 2009; Sellar & Lingard, 2014; Spring, 2008). In this framework, education is understood to be transferrable, and so educational, and its related human capital can be transformed into economic capital and vice versa (Becker, 2009; Bourdieu, 1992).

Young people living in urban areas are reported to have an 'urban advantage' (Sellar & Lingard, 2014; Logan & Burdick-Will, 2017) in terms of developing their educational capital. This is not a new story. Lamb and Mason (2008) reported that young people living in rural and remote areas have poorer educational outcomes than their counterparts living in urban communities. In rural and remote regions, explanations for this urban-rural gap include assumptions about education, which are predicated on a 'deficit model' – something must be *broken* or the structures that would normally enable the achievement of educational capital are *inactive* (Li et al, 2017; Schafft, 2016). Underlying this perspective, according to Gorski (2010), is a 'deficit ideology' "*based upon a set of assumed truths about the world and the sociopolitical relationships … pointing to supposed deficiencies within disenfranchised individuals and communities*" (p. 3). Collins (1988) calls deficit ideology "*a social pathology model*" (p. 304) that assumes "*homogenous norms for language and behaviour that hold across society. Departures from these norms are seen as deviations, or pathologies, which must be corrected*" (p. 304).

Educational attainment in Tasmania, and in particular on the North West, has been 'red-flagged' as critical to the state's future economic success. The *Tasmania Report 2015,* produced by Australian economist Saul Eslake[3], showed the number of Tasmanians completing Year 12 was significantly lower than in other states, and on average, the gross product of Tasmanians is significantly lower than other Australians (Tasmanian Chamber of Commerce and Industry [TCCI], 2015). Following the release of the report, Eslake stated:

> *The one thing that would do more than anything else to reduce each of those sources of the gap between per capita income and the national average … would be higher levels of educational participation and attainment.* (2015)

In public and policy discourse around educational outcomes in Tasmania, structural barriers nested within the system itself have been identified as a key issue. Ramsay and Rowan (2013) highlighted the significance of improved rates of Year 11 and 12 attainment (or an equivalent) as critical for "*social cohesion and social prosperity, for economic competitiveness, for employability, health and wellbeing of citizens*" (p. 2). They raised critical questions about the matriculation colleges and how this system has not delivered results in terms of educational retention and attainment when compared with the rest of Australia. Cranston et al. (2016) reaffirmed that educational attainment beyond Year 10 is essential to future prosperity in

[3] Commissioned by the Tasmanian Chamber of Commerce and Industry (TCCI) - http://www.tcci.com.au/getattachment/Events/Past-Events-(1)/Tasmania-Report/TCCI-Tasmania-Report-2015-FINAL.pdf.aspx

Tasmania but that its achievement is problematic in the contemporary Tasmanian context. People with low levels of education experience restricted access to full participation in a rapidly changing economy and in a region where ongoing changes in traditional industries present challenges for employment.

The twin problems of educational attainment and retention are 'wicked' (Rittell & Webber, 1973) because complex and overlapping factors such as parental educational experience, the community, the situation of families in the community, the extent to which communities and sub-communities value education, the location of the school, distance and transport to matriculation colleges, family finances, family health (physical and mental), drug and alcohol use, and their own aspirations can impact on the level of educational attainment for any individual student.

Eslake (2015) identified several key factors that contribute negatively to a prosperous vision for the state. He comments:

> *… Tasmanians are the unhealthiest, oldest, worst educated, most under-employed and most dependent on Government benefits in Australia … The flow-on effects mean increasing health costs, more people who feel alienated and who in turn have no stake in developing communities … economic outcomes for individual Tasmanians and their communities, and ultimately social outcomes as well.* (p. 35)

This view is affirmed in the report by the CEO of the Tasmanian Council of Social Service who emphasised the need for a joined-up economic and social vision (p. 5). Finally, the report identified a culture in which:

> *… 'relatively low levels of educational attainment have become the norm' – that is, one in which parents who left school at Year 10 (or earlier) and who may (or may not) have held down stable, well-paying jobs throughout their adult lives have not been persuaded that their children need to complete Year 12 (or continue in post-school education), and, some claim, actually fear the consequences of their children doing so.* (p. 39)

Accordingly, the *TCCI Tasmania Report* concluded, "'*organisational change' is a necessary but insufficient condition needed to achieve better results. There is, the report argues, also a compelling need for 'cultural change' within Tasmanian society including the whole education community*" (2015, p. 42).

The structure of education in government schools in Tasmania has been identified as a contributing factor to low educational attainment across the state. Tasmanian schools have a non-compulsory Kindergarten year, followed by a Preparatory year, then six years in Primary school (Year 1 to 6), four years in Secondary / High school (Years 7 - 10) and two years at Senior Level (Years 11 and 12). Most government schools are either Primary or Secondary, with a small number of 'combined' schools with Primary and Secondary levels on the same campus. There is a greater proportion of combined schools in the private sector. In order to continue their

education and gain a TCE[4], students in government schools have traditionally had to leave their high schools and enrol in a College for their final two years of schooling. Such a system is rare throughout Australia[5] and Eslake identified "*Tasmania's unconventional college system" as the 'elephant in the room'"* which "*in 2013 … delivered a Year 12 completion rate of just 47 per cent – nearly 30 points less than the national average*" (cited in Beniuk, 2015). While recent results show improvement, Ramsay and Rowan (2013) also identify the college structure as a key problem contributing to the strong historic trend for students in Tasmania to leave formal education after Year 10 to seek employment and apprenticeships.

Extra time in school has been embraced as a solution to the attainment and retention problem. In 2016, the Tasmanian State Government attempted to introduce a lowered school starting age by six months, to four-and-a-half, and pushed the voluntary kindergarten starting age down to three-and-a-half years. After widespread criticism, it backed down from the plan opting for an optional, rather than compulsory, kindergarten program. The Education Minister stated at the time that although the early starting time would not be compulsory, attendance rates at kindergarten would be high under the new module (Carlyon, 2016). While critics opposed to this change and believe it will impact attainment at the other end of a student's schooling, a study of New York City public schools (Moussa, 2012) found that there are no long-run effects of school starting age on educational attainment and earnings in adulthood. In addition to encouraging children to start school earlier, the Tasmanian Government also raised education and training requirements so that young people must stay in school until they either complete Year 12, attain a Certificate III, turn 18, or gain full-time employment, whichever occurs first. However, in many Tasmanian rural contexts, and particularly in the Circular Head, educational participation beyond Year 10 involves travel and/or geographic relocation to a population centre with a college.

For many young people in rural and regional areas in Tasmania, geographic and systemic obstacles impacting on their ability and willingness to attain Year 11 and 12 are considerable. In the North West region, the population is geographically dispersed and public transport is limited outside major centres. In many circumstances, private transportation is the only option for access to Year 11 and 12. Poor access to educational locations may impact on a student's incentive and ability to continue schooling and training. Until recently, government school students in the region, aspiring to complete Year 11 and 12, had to leave their community to live in the city or travel on a bus each day for three hours each day to the nearest College, in some cases only for one or two units. While the local high school now offers Year 11 and 12, students' access to a variety of pre-tertiary subjects remains limited.

The historical reality requiring many young people to leave the local school at Year 10 to complete their schooling has contributed to a particular culture that Eslake and Rowan and Ramsay believe undermines educational attainment. Eslake has cited one cultural event in particular, the 'Leavers' Dinner', as problematic, arguing that the title of this event sends the message that Year 10 is an 'exit point' from the education system (2017). This perceived exit point, Eslake argued, has resulted in young people failing to continue onto College effectively

[4] TCE (Tasmanian Certificate of Education) is the main credential awarded to students who complete secondary school.

[5] In the Australian Capital Territory, students may also transition to a different campus after Year 10.

ignoring:

> *… a clear and unambiguous body of evidence which shows that kids who 'drop out' of formal education at Year 10 … have a much higher probability of being unemployed than those who stay longer in formal education, and if they do find work they'll get paid less for it than those who have stayed on in school (and beyond).* (2011)

While the structure of schooling in Tasmania has resulted in such cultural practices, in rural parts of the state there are also historical cultural practices that put pressure on continuing education. For many, College participation has not necessarily been a normal part of family life or part of habituated educational trajectories, nor is it seen as necessary employment preparation. While debates continue about the relative importance of structural versus cultural/attitudinal factors for educational attainment and retention in contemporary Tasmania, it is generally understood that they work together in some way.

The level of locational disadvantage, the availability and quality of educational resources and support, the level of parental education, family structure and cohesiveness and finances impact on attainment. Eslake has cited a number of reasons for the failure of Tasmanians to complete secondary education but has highlighted parental attitudes about education and family as key:

> *I left school at Year 10 and I did all right, so what does it matter if my son or daughter doesn't go on to Year 11 and Year 12. Others think, 'if my son or daughter goes on to Year 11 and Year 12, he or she will then go on to university, and then have to go and get a job on the mainland, and I'll never see him or her and my grandchildren.'* (2011)

While Eslake's comment highlights the fear parents and families have about their children leaving home, Corbett (2007) has identified the benefits to young people that arise from leaving their home region to travel, for higher or further education or to otherwise enrich their lives. He refers to this as 'learning to leave' and acknowledges that formal education must encourage young people to transcend the familiar or 'what is known' although this can be a highly ambivalent experience.

Those with low levels of education are considered to be at a significant disadvantage in full participation in a rapidly changing economy. In rural regions, where changes in traditional industries present challenges to employment stability (Eslake, 2015) and modernisation requires a reimagining of jobs and careers, sufficient and ongoing education/learning becomes even more important. Political and civil society leadership have long identified this problem and noted that the formal education system cannot be solely responsible for improving attainment within the community. To date, many activities have been initiated within the region, which address literacy and support learning and training. These activities operate across the full range of organisational levels (from grassroots to Federally-funded programs across diverse Commonwealth departments) and educational levels (pre-kinder to adult learners).

Educational attainment: A wicked problem in a Northwest Tasmanian community

The North West of Tasmania faces some long-standing problems. Jonathan Salgo wrote, citing Australian economist Saul Eslake:

> … *northwest Tasmania … has a 'narrow economic base' and remains rooted to Australia's old economy, [such] communities are reliant on manufacturing and now find themselves unable to compete with the economies of scale and cheap labour from Asia. To make matters worse, these places have some of the worst school retention rates in the country*. (2015)

As a region, however, the North West has the lowest unemployment rate (4.6%) in the state (Australian Government, 2016) with lower than the national average for both youth and adult populations. Conversely, traditional industries such as logging and mining have been on the wane for at least ten years, and the long-term viability of large vegetable processors in the region is uncertain. There is also a perception that the region is poor in both assets and activity. However, the area also boasts natural resources and a thriving agricultural economy. We do not suggest these data, taken on their own, necessarily suggest a robust economy, only that the picture is complex.

While employment in the North West is better than other similar remote/rural regions in Australia and Tasmania, educational attainment is poor. Schools in the region have some of the state's highest levels of disadvantage (ICSEA)[6] and lowest levels of educational attainment in the state (*My School*)[7]. While there are industry and agricultural employment opportunities in the region, and well-supported educational facilities, social disadvantage remains. Nevertheless, *My School* data also show that, compared with other socially and economically similar (ICSEA) schools across Australia, schools in this area generally perform as well as, or better than their national comparators in reading and numeracy. The apparently contradictory nature of different kinds of data do not present a simple picture of educational failure but a complex portrait of a community that, in some respects, performs exceptionally well educationally given the challenging economic conditions in the region. The human capital thesis that higher levels of education are drivers of economic development (Becker, 2009; Eslake, 2017) obscures the converse possibility that educational outcomes reflect economic conditions.

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[6] ICSEA (Index of Community Socio-Educational Advantage) is a scale which allows for fair and reasonable comparisons among schools with similar students (Australia). (http://www.acara.edu.au/_resources/About_icsea_2014.pdf)

[7] My School is a resource for parents, educators and the community to give readily accessible information about each of Australia's just over 10,000 schools and campuses. (https://www.myschool.edu.au)

Research method: Concept mapping with Coggle™

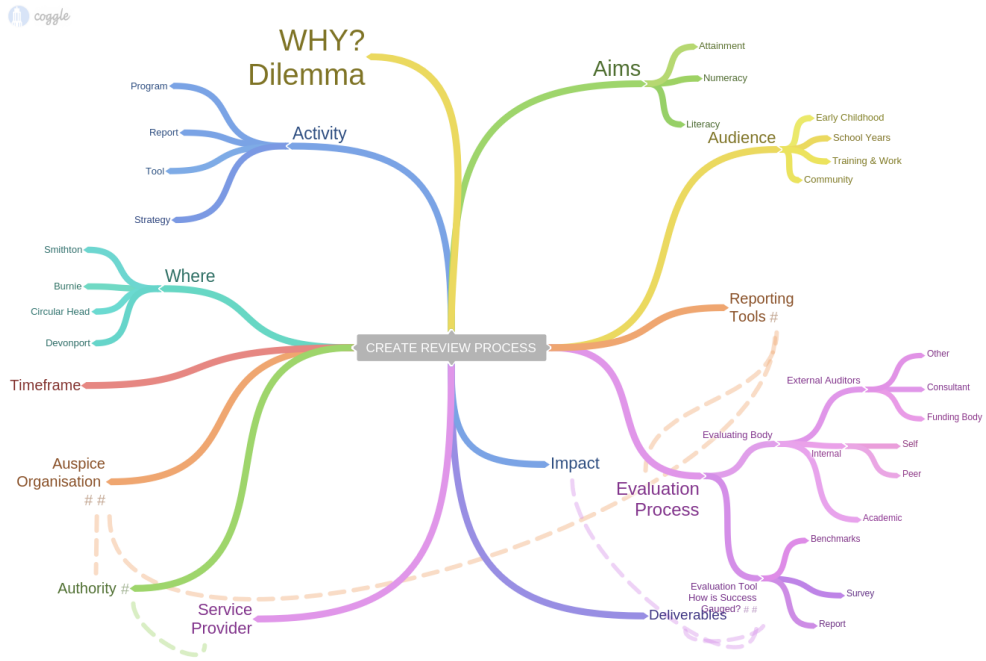

Figure 1. **CREATE Review Process map**
http://www.utas.edu.au/__data/assets/pdf_file/0006/1049082/Coggle-CREATE_REVIEW_PROCESS.pdf

In early meetings with the stakeholders in the community, researchers explored the concept of a 'shift in culture' in the community and initiated Internet searches for all activities, research, reports, organisations and programs that were connected with issues related to educational attainment and supporting changing attitudes and cultural habits. This scope was necessarily broad, and we first looked for activities suggested by the stakeholders, such as intervention programs in the early years; to mental, drug and alcohol support for teenagers and young adults; to support for parents of school-aged children. Next, we searched for websites of community service providers, i.e., Department of Education, NGOs, and government departments – state, federal, and local. The results were imported into a database and then categorised. While the database contained a lot of useful information, but we wanted to understand the spread and depth of community activities better.

Concept Mapping

As education spans social, cultural, political, geographic domains, tools enabling more nuanced understandings and insights into multiple perspectives were required for this research. Hence we employed concept mapping as a means of structuring a re-presentation of knowledge about the activities in the region. Jonassen and Grabowski identify structural knowledge of this kind as a separate type of knowledge, in that it,

> *… provides the conceptual basis for why. It describes how prior knowledge is interconnected … Structural knowledge is most often depicted in terms of some*

> *sort of concept map that visually describes the relationships between ideas in a knowledge domain* (1993, p. 433).

Joseph D. Novak articulated concept mapping in the 1960s. He based his work on that of David Ausubel (1968), who identified how individuals learn large amounts of meaningful material from verbal and textual presentations in school. Novak believed that the representation of knowledge in the visual form of a concept map allows the opportunity to gain an overview of a domain of knowledge. As a re-presentational method, concept mapping has several key advantages. Visual symbols are easily recognisable and, when combined with minimal text, can be 'read' quickly. Visual representation also allows for the development of a holistic understanding of a concept that words cannot always convey. Concept mapping was developed in relation to constructivist learning theory, which argues new knowledge is best integrated into existing structures in order for it to be remembered and receive meaning. Yet concept mapping takes this process one step further by requiring (and allowing) the reader to pay attention to the *relationships between* concepts. Concept mapping has since been used for many such purposes, including designing complex structures (for example, hypermedia), communicating complex ideas and brainstorming (Plotnick, 1997).

The research reported here initially focussed on locating activities and programs that both directly and indirectly supported students to complete Years 11 and 12; however, from the beginning it was clear the scope was wide and varied. We found that in order to document activity appropriately, we needed to map the many organisations offering programs and funding, research activities, outcomes and reports, originating from grassroots initiatives and non-government organisations through to the local council, state and federal government programs. The range and number of activities being undertaken in the region, as well as state-wide and national projects which impact on the area, created issues for categorisation of the data. We were dealing with complex and interwoven qualitative information that revealed stories and activities and resulted in data that was initially challenging to visualise and code.

The information gathered about programs relating to educational attainment soon outgrew the original six research sub-questions (which were themselves re-shaped by the mapping process) and the researchers' capacity to categorise them. We required a tool that allowed us to express data that was multi-dimensional and participatory in a graphically legible manner and that reflected the multi-layered nature of both the data and the thought processes of the researchers. The Coggle™[8] mapping tool enabled us to graphically represent the network of activities and to visualise and reveal the possible stories that the data had to tell. The Coggle™ mapping process initially assisted in creating a simple visual 'map' of the activities in order to illustrate what had been found, to help in categorising activities and to focus and refine the data. The Primary map (CREATE Programs, Funding, Research, Reports Figure 4) provides a graphic representation of where the gaps were found to exist in the data, and therefore, in activities in the region. (NB: This Primary map is presented at Figure 4 with the intention to

[8] https://coggle.it – developed by Cambridge University's ideaSpace group, 2013.

provide a visual image, however it is recognised that the text on the image is not legible in this format.)

The dynamic process of creating a simple concept map using Coggle™, not only concentrated focus; the interactive capabilities of the software facilitated collaboration, discussion between researchers. Coggle™ enabled us to unearth different connections and look at the collected information from differing viewpoints and view the information from a different perspective, to further define the research questions in order to unearth the 'research story'. Rather than creating maps from linear text, we generated what we characterised using Deleuze and Guattari's (1987) idea of the rhizome. Coggle™ mapping allowed us to start anywhere within the map: stretching, interacting, inserting and also hyperlinking with other formats. The considerable amount of data collected and categorised in CREATE presented a complex structure of diverse, interconnected, multifaceted programs, organisations, research, reports, funds and activities within the community. In addition to the complex Primary map, concept maps were used to expand and interact with the CREATE Review Process map (Figure 1) to provide overviews of some of the individual projects and activities and then more were created to flesh out concepts and ideas in the research.

Mapping the Data

When structuring the maps, we first identified a layer of theme-nodes of educational age groups (early years, primary school, secondary school, and tertiary). This resulted in regional Activities *and Programs* map. The aim of this map was to gain a readable overview of the educational landscape the activities and protagonists 'at a glance'.

The Primary map was informed by the findings of the Literature Review being undertaken concurrently with the mapping process. The themes explored in the review that became nodes were Organisations; Culture; Transport; Department of Education, Early Childhood, Primary, High School Year 11, Year 12, Year 12 & 12 Equivalent, Higher Education, and Work. Each node was generated from the central title section of the map. These category nodes then sprouted further 'arms' for each of the activities that fit within that category. Links between the various arms were inserted (seen as dotted lines on the maps) to represent connections between the category nodes.

Reading the Maps

Ultimately the Primary map served several functions:

- Shared knowledge with colleagues and other researchers in this field, providing a springboard for discussion.
- Printed out at large scale, it was readily interrogated by the stakeholders at meetings and a later workshop. These interrogations identified gaps in activities while it also assured sceptical stakeholders that there were many activities being undertaken in certain nodes. For example, around the High School and Transport nodes, few activities were identified. Around the Early Childhood node, however, there were many activities, which were complementary and several of them had been evaluated.
- It validated the process and the method of mapping, as the maps encapsulated a large amount of data, which could be easily 'read' by the stakeholders.

- It allowed the stakeholders (particularly the local Council) to recalibrate their educational support focus. For example, the suggestion that high school students needed more extra-curricular support was discussed.
- Further, problematic issues of timetabling and poor transport scheduling (obstacles to travelling to college or to specialist subjects) were acknowledged by the Council and High School representatives.

When the located activities and their respective attributes became too complex for either the researchers or the community stakeholders to make sense of the Primary map, more detailed maps were developed which represented activities taking place at the macro, meso and micro levels within the community. The maps moved from the Primary map (the macro), to the meso Early Childhood Map (Figure 2) and onto the micro, Rural Health HIPPY[9] map (Figure 3). These maps were shared with community stakeholders. The meso shows an enlarged section of the Primary map - the Early Childhood node (offering a legible sample section of Figure 2). As Plotnick (1997) notes, the maps were an ideal format for communication with the stakeholders as they could be emailed, projected, captured as jpegs and inserted into the project's Wiki rapidly and without losing image quality. Online, all stakeholders could also have access to manipulate and edit them and this was an original intention of the project.

The lead author generated the following maps:

- Regional literacy activities and programs (map)
- CREATE Programs, Funding, Research, Reports (Primary Map) (Figure 4)
- CREATE Case Stories criteria
- Rural Health HIPPY (Home Interaction Program for Parents and Youngsters) home interaction program (Figure 3)
- CREATE Methodology (Exploratory potential methodology)
- CREATE Research Outputs
- CREATE Review process (see Figure 1)
- Early Childhood (a section of the map) (see Figure 2)
- North West: Key organisations and events
- Pathways post Year 10
- Physical factors pertaining to attainment
- ABS Report: Educational Outcomes, Experimental Estimates, Destinations and Outcomes of Tasmanian Early School leavers: Findings, Tasmania 2006-2013.

We used the Primary Map as an opportunity to identify and 'drill down' into each of the nodes; for example, the Home Interaction Program for Parents and Youngsters (HIPPY) node. HIPPY appeared in the Map as a program that was well evaluated and active in the region. It became a case study, one of six. We selected these case studies from the nodes of the map, which directly impacted positively on educational attainment, in some form, in the region.

[9] HIPPY: Home Interaction Program for Parents and Youngsters. (http://www.ruralhealthtas.com.au/?page_id=18)

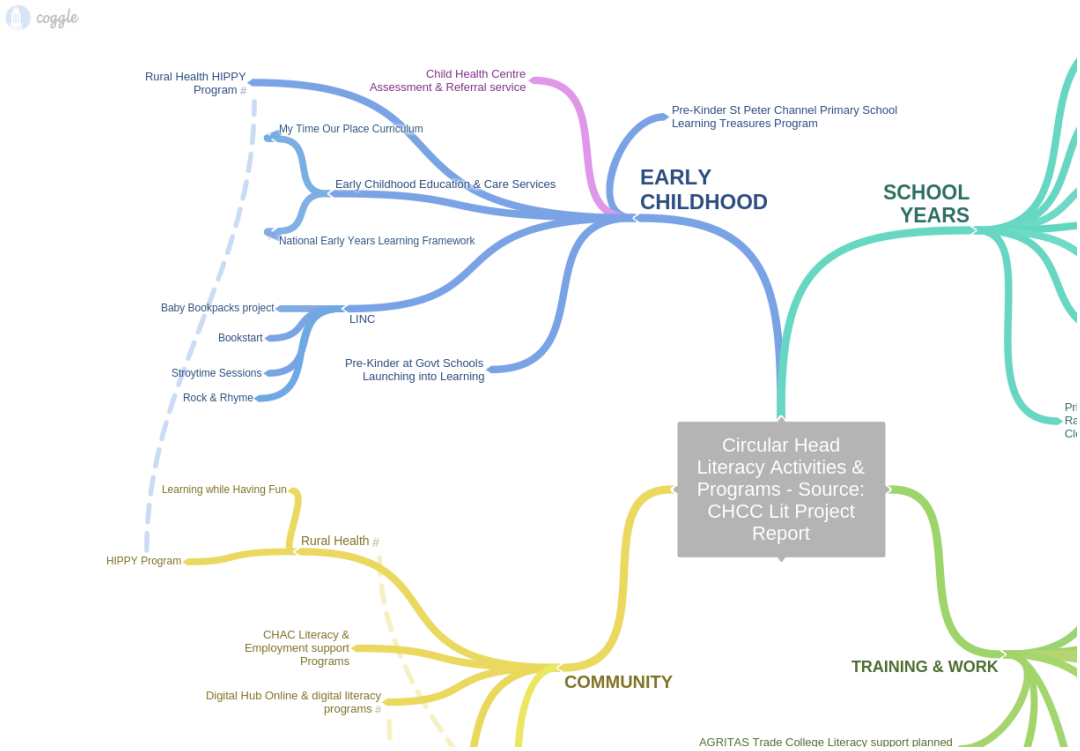

Figure 2. **Enlarged Early Childhood node- Regional Literacy Activities & Programs**
http://www.utas.edu.au/__data/assets/pdf_file/0005/1049081/Coggle-RURAL_HEALTH_HIPPY_HOME_INTERACTION_PROGRAM_FOR_PARENTS_AND_YOUNGSTERS.pdf

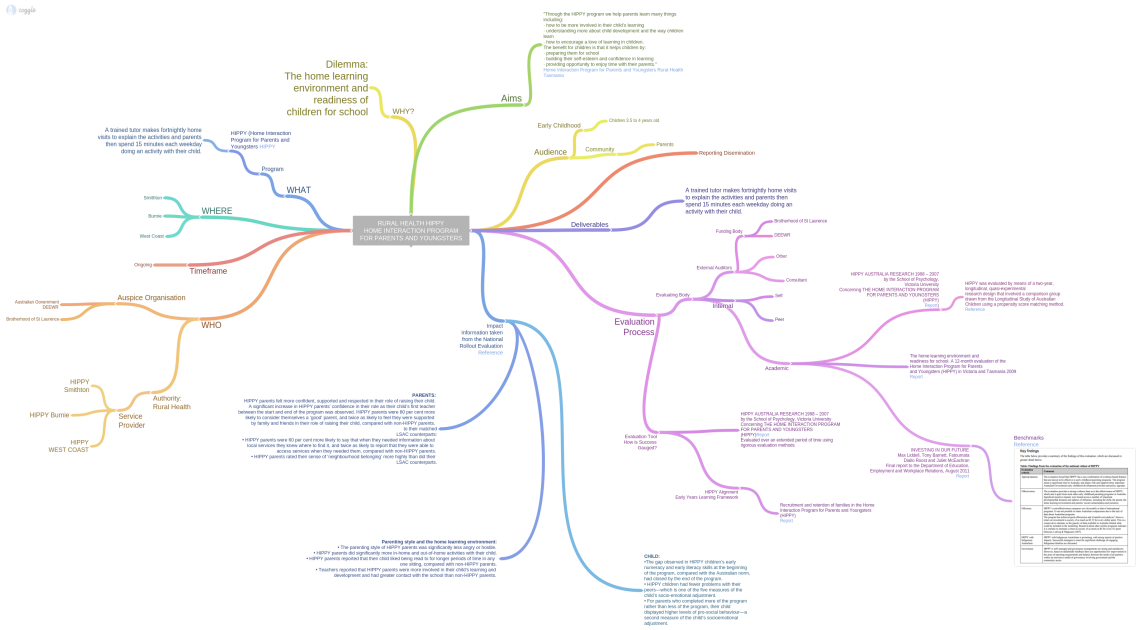

***Figure 3*. Rural Health – Home Interaction Program for Parents and Youngsters (HIPPY)**
http://www.utas.edu.au/__data/assets/pdf_file/0005/1049081/Coggle-RURAL_HEALTH_HIPPY_HOME_INTERACTION_PROGRAM_FOR_PARENTS_AND_YOUNGSTERS.pdf

Snapshots and Interactions

The mapping process facilitated visual snapshot representations from within the scope of activities in the community and provided visual and spatial modes of analysing and synthesising the data. The maps diagrammed and dis/connected the ephemeral and dynamic web of diverse programs, organisations, funding, reports, investigations and activities focussed on supporting educational attainment. They demonstrate how the connections in the network of educational activities are constantly changing and expose research and activity gaps which initiated critical educational geographies.

The mapping process structured the data through the course of questioning, categorising and connecting the variables visually. While the resultant maps are a way of communicating the data, viewing the map as a final image is not as effective a learning tool as creating a web-based map that invites users to contribute new information and to 'grow' and edit the map. The Primary Map interacts with the ideas and research focus for manipulation in real time as discussion was happening within the team and with community stakeholders. While the Primary Map is far from a definitive representation, it visualises an emerging picture that can facilitate interaction, alteration and adaptation. It illustrates a community actively creating a wide range of programs focussed on the long-term improvement of educational attainment levels and outcomes for young people. We tendered these maps to community groups for their input and interaction to invite continued growth and expansion. Indeed, our goal was to help stakeholders imagine new nodes and connections that could lead to more conscious and coordinated developments which, in turn, could create new forms of activity as well as identify nodes that have terminated.

The Primary Map counters the perception that there is a deficit in the community, that structures that enable education attainment are inactive and that education is not valued – effectively addressing our major research question – by demonstrating an active, networked community committed to supporting literacy and numeracy outcomes for their children, providing activities that engage and support parents of young children, and multiple government and private sector actors committed to collaboration and improved outcomes for its young community members.

The Primary Map also reveals that the variety and number of factors that impact educational attainment range from the macro to the micro, from State education department structures to the influence of a particular teacher to variously address social, cultural, economic and structural factors identified earlier. The maps also identify gaps. Areas of activity in the Primary Map indicates and alludes to issues like:

- There is considerable input into the early learning years through HIPPY and Launching into Learning[10] activities at the LINC[11], for example, for pre-school students.
- Conversely, there is a low level of support activity focussed on High School age students, and particularly Years 11 and 12.
- The growing focus is on family as the aspirational unit in the early years, but this falls away as the students move up through Primary and High School; and
- There are many options and pathways for students but logistical obstacles exist, such as the school bus leaving very early during the cold, dark winter months of Term 2, or the inconvenience of a student's timetable of subjects at a distant College to which rural/regional students are bussed.

The mapping process demonstrated the concentration of activities in the early years that largely support literacy and a growing trend of focusing on the family as what we called the 'aspirational unit' or the site at which crucial decisions are influenced by family based '*habitus*' (Bourdieu, 1984) or established cultural practices. Activities and programs that focussed on secondary school students addressed broad social concerns such as mental health and drug and alcohol support. Extra-curricular programs for high school students that focus on educational attainment and aspiration, and programs addressing the transition from Year 10 to Years 11 and 12, and academic success in Years 11 and 12 were much fewer in number and usually short-term in nature.

The 'gaps' illustrate the complexity of the physical obstacles for rural families and that transport to Colleges affects students' decision-making, successful Year 12 completion and their achievement of ATAR[12] scores.

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[10] Launching into Learning provides resources to schools to develop and lead initiatives with families and their community to support children's early learning prior to Kindergarten. (https://www.education.tas.gov.au/parents-carers/parent-fact-sheets/launching-into-learning/)

[11] For further information on LINC see: https://www.linc.tas.gov.au/Pages/Home.aspx

[12] The Australian Tertiary Admission Rank (ATAR) is a calculated to represent a student's rank among all Year 12 students in Tasmania, (a number between 0 and 99.95) ATAR provides a method of comparing students who have undertaken varying subjects and ranks their position relative to all the students completing Year 12 in the same year. (http://www.utas.edu.au/admissions/undergraduate/australian-tertiary-admission-rank-atar)

For example, while students at the High School can now continue to Years 11 and 12, pre-tertiary offerings are limited and for most students to receive an ATAR they still must travel to College in one of the major centres of the state. The Primary Map also identified a big 'gap' in the number of activities or the level of interaction and services for students from transition to Year 10 to Year 11 and support while completing Year 11 and 12. The complexity of locational/accessibility, cultural and economic factors have all been found to play into historically low levels of educational attainment and retention in Tasmania, mirroring findings in other rural locations in Australia and internationally (Abbott, Chapman & Kilpatrick, 2001; Stewart & Abbott-Chapman, 2011; Watson, et al., 2015; Watson, et al., 2016).

The mapping process enabled by the Coggle™ tool provided a more inductive and reflexive method of research questioning overlaid on this literal representation which shows *why*, *how*, and, more vitally, *what* was unseen. The maps show how programs and activities are networked and how there is no ending or beginning. As the Primary Map is a macro expression of activities, it is possible to drill down to reveal a micro HIPPY map which is equally complex, demonstrating its 'health and vigour' by virtue of its many and multidirectional shoots. The HIPPY map is evidence of a node, which has been supported (fed and nourished) in the community, and which has sprouted and grown in various and unanticipated directions. The Primary map, as a growth of connections, surprised even seasoned community actors who thought they knew pretty much everything happening in the region.

What the analysis of the maps shows is a responsiveness to educational change within the region, rather than stagnation. A more complex analysis challenges the linear picture of educational underperformance in the region as it examines multiple data sources and 'maps' them together as process rather than product. This, we think, is a key limitation of analyses that fix educational performance into static data points and rely exclusively on a limited number of dependent variables such as standardised NAPLAN scores to assess the quality of education. We do not suggest here that standardised assessments such as NAPLAN, PISA and TIMSS are inappropriate or misguided; rather, it is our view they capture only a small part of the story. By contrast we believe the emergent mapping undertaken in this research encourages another way of representing educational work and, indeed, progress. And of course, as a rhizomatic, becoming-map, to paraphrase Deleuze and Guattari (1983, 1987), its lines seek not to point to a static truth but rather to raise additional questions, lines of inquiry, and action.

Conclusion

In this research, we located programs and activities related to educational attainment in an area of North West Tasmania. The database, which grew rapidly, revealed multi-sectoral activity, from education to health to economics, across government, to community and beyond. The location and focus of the activities evolved into a complex network of impacting factors and opened up questions about how to categorise these data and where influences on educational attainment are perceived to start and finish. This process enabled us to reflect back to stakeholders in the North West what has been, is and what might be possible in the educational attainment space. This also formed the basis of a discussion about cultural change with our maps as critical

reflection tools rather than authoritative, final representations. The work we did in the community also allowed us to generate case studies – positive narratives of success and community pride.

We initiated this research to work with stakeholders with a view to developing future working partnerships to develop effective and sustainable solutions in the region which has led to a collaborative research grant application for 2018 aimed at building and researching emergent networks. Our research question: 'How can communities, perceived to be deficit models, be provided with evidence of activities aimed at impacting educational attainment in a meaningful way?' has highlighted existing networks of support that facilitate deeper understanding of wicked educational problems in the region. Our research process has enabled us to identify a wide range of support, programs and interventions focussed on addressing educational attainment. The perception of the area as typical of a *deficit model* narrative is challenged by this outcome, but many structural and cultural obstacles remain for students completing Years 11 or 12 and present a complex emergent scenario that needs to be better understood and addressed proactively and ideally through cooperation throughout the networks we have started to map.

In addition to the identification of gaps, the Primary Map prompted new questions, as valuable starting points for the stakeholders and community as they are constructed to help focus and define, for example, strategies for funding, education programs, those in need of specific support, better modes of communication with residents and conversations that must be initiated with specific groups. For instance, spaces and people who can't be mapped, or beyond the reach of the map raises questions about how they can be reached? Or how can the stakeholders manage the maps, as ongoing documentation of activities in the region? And finally, the subject of our proposed research for 2018 raises questions about how a regional university can develop programming with community stakeholders to create a multifunctional professional learning hub and teacher education program at a distance from central campus locations. These are key social justice and rural education questions that our mapping has stimulated with community partners

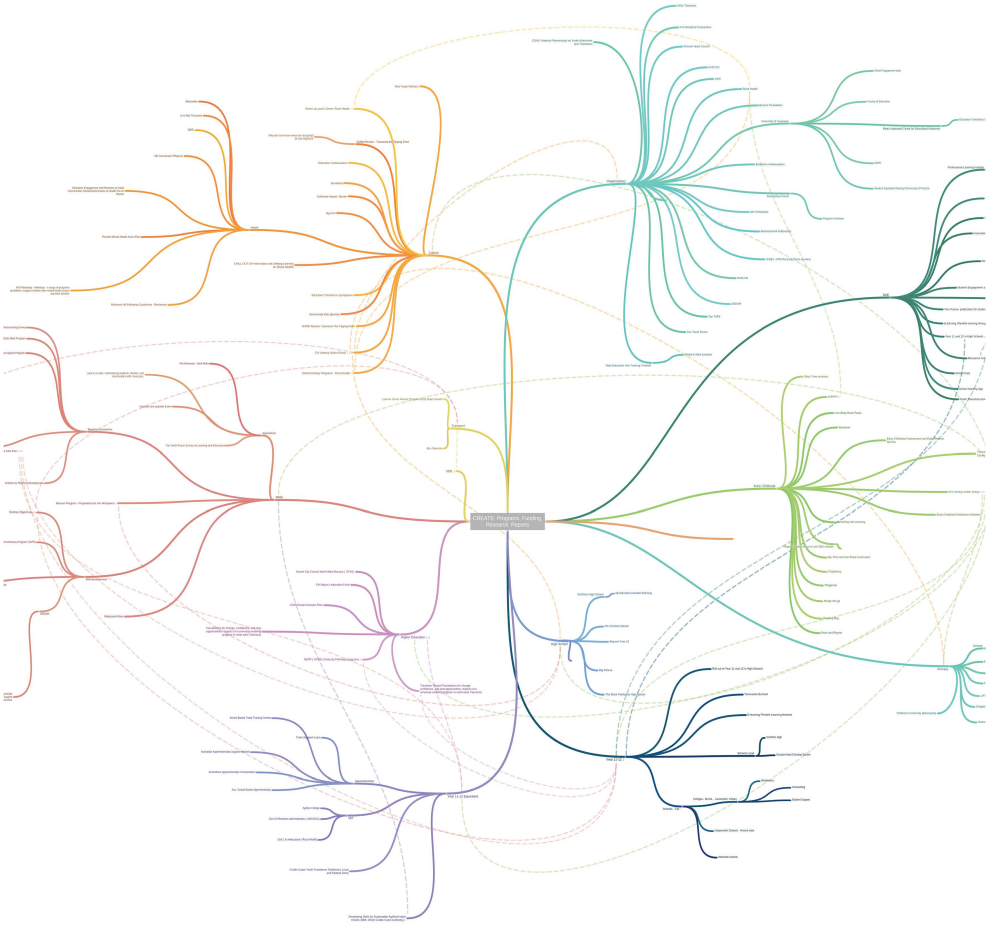

Figure 4: *CREATE Papers, Funding, Research and Reports (Primary Map)*
http://www.utas.edu.au/__data/assets/pdf_file/0004/1049080/Coggle-Map-Primary.pdf

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