

Recipient Details

Name of organisation or individual: [O] AARNet Pty Ltd

Reference Type: NGO

State or territory: ACT

Serial Identification Number: 478576

Responses

Curriculum and assessment

The rapid and increasing rate of technology-driven change has been a significant factor in the “digital disruption” that has impacted every aspect of Australian life, including teaching and learning. In this hyper-connected world the rote learning of facts is a far less important aspect of any curriculum than learning how to learn and how to apply knowledge and problem-solve. The Australian curriculum will increasingly need to be viewed as something very dynamic, responding as it must to new innovations be they technological, social, demographic or indeed, geographic.

Because connectivity underpins the concept of digital disruption, all schools, regardless of location, need to have “location” (and by inference “cost”) removed as a barrier to their ability to gain access to the curriculum and any human and digital resources that allow the teaching staff to engage in professional development, or that supports the students in their learning.

A simple contemporary example is the demonstrated concerns schools have regarding their ability to access the online NAPLAN assessments, which clearly impacts an innovative approach to assessment.

A systemic shift is needed to improve broadband services to schools, particularly in regional, remote and rural Australia to remove any barriers to the adoption and evolution of curriculum and the adoption of new and innovative assessment techniques. As noted below (under “Information and communication technology”), this is not addressed by the NBN.

Rating: 5

Teachers and teaching

Quality teachers and quality student-teacher relationships are the key factors in improving student learning outcomes (Hattie, 2003, 2009). The quality of the enabling technology services, such as the speed of broadband services provided by AARNet (or of any other supplier) are much less important. However, because they are enabling services, they can have a profound impact on the ability to attract, retain and develop teachers. This impact is greater when there is a discrepancy between such services in one school or region and another. Such a discrepancy exists between metropolitan and near-metropolitan schools and those in regional, rural and remote Australia.

As noted in the discussion paper, “For employed teachers, timely access to high quality, relevant, regular and affordable professional development is crucial for building and sustaining their effectiveness”. In the same way that teaching itself has been transformed through technology, there are tremendous opportunities to better support teachers in regional, rural and remote Australia through blended and online professional development. To be successful in a professional context, such a transformation depends on high quality, robust broadband. Further, the increasing use of real-time collaboration (video conferencing), and media-rich social network applications

significantly mitigate the isolation and separation from peers that many teachers in regional Australia experience.

More broadly, teachers, their partners and families make choices about where they live not only based on their work environment, but also on the quality of the institutions and facilities in their town or region. This includes schools, hospitals, libraries, cultural institutions, TAFE institutes, university campuses and study centres, etc. and is particularly true in regional Australia, where providing “metro-equivalent” digital infrastructure and services for these institutions, particularly, is as an important factor in attracting and retaining staff as it is for schools. Strengthening institutions within regional Australia is fundamental to not only regional development, but also to sustaining regional communities.

Rating: 6

Leaders and leadership

Most of the issues highlighted under “Teachers and teaching” are also applicable to “Leaders and Leadership”. The opportunity to make better use of technology to address some of the issues of isolation and lack of access to professional learning is particularly applicable to senior teaching staff requiring mentorship, coaching and access to post graduate programs, many of which are now delivered in a “blended” format.

Again, to be successful in this professional context, this approach depends on a high quality, robust broadband to provide dependable high-quality real-time collaboration (video conferencing), and access to social network to mitigate the isolation and separation from peers that many principles in regional Australia experience.

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Rating: 6

School and Community

The discussion paper suggests the essence of social capital can be summed up as “relationships always matter”. This notion underlies a great opportunity for regional and rural communities; to address the economies of scale that exist in regional Australia innovative approaches need to be explored that span portfolios and sectors. For example, rather than treating “poor broadband for public schools” within a region as one challenge to be addressed, look for approaches that can have an impact across multiple challenges, including (in this example, improved broadband) across multiple school sectors, other institutions that support schooling such libraries, vocational and higher education, and perhaps health care and other support services.

This community aggregation model has proven to be successful in delivering very high quality broadband services into regional areas include in Geelong, Victoria and Mount Gambier, South Australia:

- First regional public library to connect to AARNet opens

<https://news.aarnet.edu.au/first-regional-public-library-to-connect-to-aarnet-opens/>

- North Geelong Secondary College leads the way with digital learning

<https://news.aarnet.edu.au/north-geelong-secondary-college-leads-the-way-with-digital-learning/>

Rating: 5

Information and Communication Technology

A seismic shift is required to improve broadband services to schools, particularly in regional, remote and rural Australia to remove any barriers (capacity and cost) to accessing digital resources and innovative curriculum, adopting assessment techniques and developing pedagogies to support schools teaching and learning mission. Regional, rural and remote locations have the most to gain from such a shift, as affordable, higher quality broadband is capable of delivering rich media learning resources and high quality, low-latency video streaming and video conferencing that mitigate distance and isolation.

The National Broadband Network (NBN) is designed to support individual residences and homes. The services provided by the NBN are too expensive and technically inadequate to meet the needs of schools or institutions, given the intense usage profile (9am-3pm) of schools, the concentration of users (typically hundreds of students and teachers) and the increasing dependency of schools on high bandwidth, high quality, always-available broadband. For schools in remote Australia that can only receive service through the SkyMuster satellite, even the Public Interest Premise (PIP) arrangements are inadequate to meet the needs of all but the smallest schools (but are obviously better than nothing). For remote distance education students, the SkyMuster service is currently constrained by a wide range of complex quotas, further limiting the ability it has to serve these very disadvantaged students.

Most state schools in regional and rural Australia receive broadband services through their Department of Education, but in many cases the bandwidth provided falls short of what is needed to remove barriers to innovative teaching.

AARNet recommends:

- Exploring community aggregation models to provide quality broadband to schools and communities in regional and rural Australia
- Developing a school-specific NBN SkyMuster offering for remote schools incorporating:
 - o A significantly reduced, PIP-specific Connectivity Virtual Circuit (CVC) price, perhaps based on time of day
 - o Removal of the ratio of minimum Access Virtual Circuit (AVC) to CVC bandwidth (*an NBN construct)
 - o Significantly higher quotas available to PIPs during differentiated peak times
- Collecting data on the actual usable bandwidth available to schools, perhaps based on the MySchools website.

Rating: 7

Entrepreneurship and schools

Entrepreneurship is emerging as a desirable skill in the evolving digital economy. In line with the Maker Movement and computer-coding-as-a-literacy, entrepreneurship skills are likely to be key for many students to achieve in a hyper-connected economy. The nature of most start-ups are that they are driven by technology, or enabled by communications and collaboration enabled by technology - students in regional, rural and remote Australia will be disadvantaged in the 21st century without access to ubiquitous high speed broadband within their schools and institutions.

One approach to facilitating entrepreneurship, leveraging improved broadband, is to establish a network of regional and rural innovation centres, or hubs, located within regional rural Australia, but operating as a joined-up community of innovation hubs interlinked by digital, immersive collaborative workspaces with co-working areas and (virtual) access to mentors and other innovation hubs located in metropolitan areas. This notion of a National Centre for Innovation Impact (NCII) has been developed by a number of interested stakeholders and (obviously) aligns strongly with the government's National Innovation and Science Agenda (NISA).

Rating: 3

Improving access – enrolments, clusters, distance education and boarding

Enrolments

AARNet has no comment on the importance of enrolments.

Clusters

Potentially transformative. A cluster, or community aggregation approach, has significantly improved broadband services in a number of regional communities serviced by AARNet including Mount Gambier, South Australia, Geelong, Victoria and Moss Vale and Taree, NSW. These have been undertaken in partnership with AARNet's shareholder universities establishing campuses and/or study centres in these regions which has created opportunities for students in regional areas to continue their studies in-region. Students that undertake post-school study in-region are more likely to stay in-region and gain employment in-region, further contributing to regional sustainability and regional development.

Note that this approach is a logical extension of the Federal Government's proposed regional study hubs (included in the 2017 Higher Education Reform package), and the NSW government's Country University Centres program.

The community aggregation model is an innovative strategy to address the challenging economies of scale that exist in regional Australia because it requires a cross-portfolio and/or cross-sector approach.

For example, rather than treating "poor broadband for public schools" within a region as one challenge to be addressed, look for approaches that can have an impact across multiple challenges, including (in this example, improved broadband) across multiple school sectors, other institutions that support schooling such libraries, vocational and higher education, and perhaps health care and other support services. Ultra-high quality, ultra-high bandwidth broadband for regional institutions is practical and affordable.

Distance Education

. Distance education has been inextricably linked to technology since the School of the Air. The quality of distance education is closely tied to the quality of the communication and as technology and Internet access are improved for rural and remote communities, so has distance education.

Boarding

Although AARNet has no specific comment on the impact of the role of boarding, it is important to note that for schools providing boarding there is an obligation to ensure their broadband services are sufficient to meet the modern expectations of “the phone call home”, specifically the use of real-time video and other rich media interactions.

Rating for enrolments: 2

Rating for clusters: 7

Rating for distance education: 7

Rating for boarding: 2

Diversity

AARNet has no specific comment on the role of diversity, however access to adequate and affordable broadband has the potential to mitigate a number of equity of access issues.

Rating: 4

Transitioning beyond school

More than half of AARNet’s shareholder universities operate campuses in regional Australia to enable school students in regional areas to continue their studies in-region. Because students that undertake post-school study in-region are more likely to stay in-region and gain employment in-region, this practise contributes to regional sustainability and regional development. AARNet strongly supports the Federal Government’s regional study hubs proposed in the Higher Education Reform package, and the NSW government’s Country University Centres program.

Rating: 5

Additional Comments

Executive Summary

- The rapid and increasing rate of technology-driven change has been a significant factor in the “digital disruption” that has impacted every aspect of Australian life, including teaching and learning.
- Because connectivity underpins the concept of digital disruption, all schools, regardless of location, need to have “location” (and by inference “cost”) removed as a barrier to their ability to gain access to the curriculum and any human and digital resources that allow the teaching staff to engage in professional development, or that supports the students in their learning.
- A seismic shift is needed to improve broadband for schools in regional, rural and remote Australia.
- The services provided by the NBN do not meet the requirements of schools – AARNet has proposed some specific technical changes that address this.

- Ultra-high speed, ultra-high-quality broadband can be provided for regional and rural educational institutions by leveraging regional and rural university campuses, study centres and facilities, and applying a community aggregation model.
- Affordable, quality broadband is not only crucial for schools, it enables other institutions (libraries, health care facilities, TAFE's) to build quality infrastructure to attract and retain staff, and make regional Australia more attractive.
- A National Centre for Innovation Impact (NCII) would enable Australia's distributed innovation system to work in a more joined-up manner.

AARNet is Australia's National Research and Education Network (NREN) and provides ultra-high speed, ultra-high quality broadband and related services (cloud storage, video, etc) to institutions within the Australian education and research sector. AARNet is owned and operated by AARNet Pty Ltd, a not for profit company owned by the universities and CSIRO. AARNet's customers include its shareholders as well as most of the Publicly Funded Research Agencies (ANSTO, GA, AIMS, etc.), several state government agencies, many TAFE's, several hundred schools, and most state and federal galleries, libraries, archives and museums (GLAMs). The AARNet network is interconnected with service providers to, and organisations that collaborate with, these education and research organisations. As an owner operator of infrastructure, AARNet's physical fibre network extends to regions and locations where universities and other customers operate throughout metropolitan, regional, and some cases, remote Australia.