European Journal of Special Education Research
ISSN: 2501 - 2428
ISSN-L: 2501 - 2428
Available on-line at: www.oapub.org/edu

DOI: 10.46827/ejse.v12i7.6996 Volume 12 | Issue 7 | 2026

BEYOND THE COMPOSITE SCORE: A MULTI-SOURCE ASSESSMENT SYNTHESIS OF COGNITIVE, MOTOR, AND ADAPTIVE PROFILES IN A STUDENT WITH MILD INTELLECTUAL DISABILITY

Mark Stuart McInnes[i]
University of New England Australia,
Griffith University, Australia

Abstract:
This paper presents a case-based synthesis of six converging assessment sources for a seven-year-old student with a chromosomal abnormality and mild intellectual disability, interpreted through Berman and Graham's (2018) educational casework framework and the ATRiUM capability domains. While three independent cognitive instruments administered across four years converge on a stable Full-Scale IQ estimate, subtest-level analysis reveals marked heterogeneity, with verbal knowledge in the average range contrasting sharply with impaired nonverbal reasoning and working memory. Cross-source evidence identifies fine and gross motor delay as a systemic barrier to curriculum access, one that suppresses adaptive behaviour scores independent of conceptual ability. Attentional difficulties emerge as an under-assessed but functionally significant concern. Findings are situated within Australian legislative obligations under the Disability Discrimination Act 1992, Disability Standards for Education 2005, and the Nationally Consistent Collection of Data. The synthesis argues that rigorous, multi-method interpretation is essential to avoid deficit narratives and to support legally defensible, strengths-based, barrier-removing instructional adjustment.

Keywords: mild intellectual disability; assessment synthesis; educational casework; motor barriers to learning; inclusive education

1. Introduction

Berman and Graham (2018) argue that assessment serves four principal purposes: summative, selective, evaluative and formative, and that value lies not in the data that assessment produces but in how that data is interpreted to guide responsive teaching and sustainable learning. This approach to responsive teaching is particularly important for students with complex needs, as the quality of assessment data and the rigour with which

[i] Correspondence: email markmcinnes@hotmail.co.uk, mmcinne5@myune.edu.gov.au

it is synthesised directly correlate with the provision of quality education. This synthesis draws upon six sources of assessment data gathered about Alex, who is a student aged seven years and one month with a chromosomal abnormality and a formal diagnosis of mild intellectual disability, as shown in Appendix A. The synthesis constructs an evidence-based account of his learning needs and their classroom implications.

The synthesis is grounded in the educational casework framework of Berman and Graham (2018), which positions assessment as the foundation of assessment validity. It is structured around the ATRiUM capability domains: active engagement, thinking and understanding, relating to others, independence and managing self and using language and literacy (Berman & Graham, 2018) as an organising lens for interpreting what the assessments mean collectively. Furthermore, the synthesis considers relevant Western Australia and national Australian legislative and policy frameworks, including the Disability Discrimination Act 1992 (DDA, Australian Government, 1992), the Disability Standards for Education 2005 (DSE, Australian Government, 2005) and the Nationally Consistent Collection of Data (NCCD, n.d.a). All of which provide the legal and professional obligations for teachers to provide equitable, adjusted, and evidence-based educational support to students like Alex (Page *et al.*, 2024).

2. Legislative and Policy Framework

The DDA 1992 (Australian Government, 1992) and DSE 2005 (Australian Government, 2005) set out the legal obligations for teachers to ensure that students with a disability can access and participate in education on the same basis as their peers, through reasonable adjustments. In Western Australia, the Department of Education (2023) stipulates that teachers must work collaboratively with allied health professionals when planning assessment and intervention. At the same time, school psychology services provide a critical gateway to formal assessment and multidisciplinary planning (Department of Education WA, n.d.a; Department of Education WA, n.d.b). The profile of Alex is of mild intellectual disability, combined with motor and attentional barriers that are documented across six sources of assessment, would likely qualify him for substantial NCCD adjustments, including a significantly adapted curriculum, environments and specialist input, given the pervasive nature of support needs across multiple disciplines (NCCD, n.d.a; NCCD, n.d.b.).

However, Page *et al.* (2024) stipulate that in Australian mainstream schools, over fifty per cent of NCCD identified students in 2021 have a cognitive disability, and most received only supplementary support. This identified gap between legislative obligation and educational practices underscores why rigorous, multi-sourced assessment synthesis is essential to ensure adequate adjustments are made so that all students can reach their full potential. A rigorous approach provides the level of professional judgement, based on evidence, required by the NCCD and establishes the case for the level of adjustment that will genuinely meet a student's needs (Berman & Graham, 2018). Kleinlein (2026) further argues that assessment in inclusive contexts must not label or stigmatise students;

rather, it should generate actionable data to improve student outcomes. This principle should guide the interpretation and application of Alex's assessment data.

3. Cognitive Profile: Consistency and Heterogeneity

There is a clear convergence across all three cognitive assessments: the Griffiths Mental Development Scales (GMDS, 2012; 2014), the Wechsler Preschool and Primary Scales of Intelligence, Third Edition (WPSSI-III, 2014), and the Stanford-Binet Intelligence Scales, Fifth Edition (SB5, 2026). The assessment data provide a longitudinal picture of Alex. The GMDS general quotient of 63 at age 55 months, the WPSSI-III Full Scale IQ of 60 at age 4 years and 7 months, and the SB5 Full Scale IQ of 62 at age 7 years 1 month are all coherent across a timeline of four years and three independent instruments (Roid, 2023; Wechsler, 2002). Berman and Graham (2018) note that assessment data gains credibility when it converges across multiple independent sources. This convergence can provide classroom teachers with confidence in using the assessment findings as a true basis for planning and provide the NCCD with the evidential documentation that substantive adjustments are required.

The data from the cognitive assessments present a stable IQ picture; however, the pattern within that profile is considerably more complex, and this heterogeneity carries direct instructional implications. Sajewicz-Radtke *et al.* (2022) demonstrate that the population of students with mild intellectual disability does not present uniformly. Instead, it comprises distinct cognitive subgroups that have meaningful variations in verbal and nonverbal strengths. The research by Sajewicz-Radtke *et al.* (2022) can be applied directly to contextualise Alex's results and reiterates that interpreting only Full-Scale IQ data obscures critical educational decision-making. On the SB5, Alex's Verbal IQ (72, 3rd percentile, borderline range) is 17 standard score points above his Nonverbal IQ (55, 0.1st percentile, mild disability range). At the same time, the five-factor range domain, knowledge: reflecting accumulated general information, falls in the average range (Index = 91, 27th percentile), in striking contrast to quantitative reasoning (Index = 50, <0.1st percentile). This contrast is not merely a statistical pattern; it signals that Alex's capacity to process and communicate through language is considerably more developed than his capacity to operate on abstract, visual, or numerical materials. Berman and Graham (2018) situate this position squarely within the ATRiUM using language and literacy domain, which is identified as the most productive scaffold for students for whom other modalities present barriers. Alex's SB5 Working Memory Index (63, 1st percentile) and inconsistent performance on sequential and numerical tasks are consistent with Gravråkmo *et al.*'s (2023) argument that suggests working memory and processing speed deficits are predictive of functional learning difficulty in students with mild intellectual disability. The consistency between Alex's results and Gravråkmo *et al.*'s (2023) research suggest that working memory limitations may compound the impact of intellectual disability on tasks that require students to manipulate information. Such tasks may include multi-step instructions, phonics blending or tracking patterns in

mathematics. Berman and Graham (2018) argue that the direct practical implication of this should flow from assessment and instructional design, meaning that Alex's programme should leverage his verbal strengths through oral modelling, scaffolded questioning, and language-rich instruction. At the same time, cognitive load should be reduced by removing abstract, nonverbal, and quantitative demands.

4. Motor Skills as a Systemic Barrier to Learning

The most consistently documented barrier in Alex's profile is not his intellectual disability, but isolation, compounded by the gross and fine motor delays in all areas of curriculum participation. There is evidence across four sources to support this assertion. The GMDS at age 55 months placed Locomotor at 24.5 months, far below Alex's language and personal-social age equivalents. The occupational therapy (OT) assessment reported a Berry-Buktenica Visual-Motor Integration standardised assessment age equivalent of 5 years 2 months at age 7 (5th percentile), handwriting at a 4-5-year level, and identified low muscle tone as a probable psychological contributor. At the same time, the Vineland Adaptive Behaviour Scales (VABS) placed Alex's Daily Living Skills at the 0.1st percentile, with the school psychologist explicitly attributing this to the impact of motor difficulties on functional independence. The classroom observation also confirms difficulty with bimanual tasks during writing and pasting activities.

The identified level of cross-source convergence provides strong evidence for the inference that motor limitations constitute a systemic barrier to curriculum access, not merely an isolated physical difficulty (Kavanagh *et al.*, 2023). This barrier must be addressed through a critical lens when interpreting assessment data, treating it as a barrier to learning rather than a deficit within the student. That intervention validity depends on removing those barriers rather than working around them (Berman & Graham, 2018). DSE 2005 (Australian Government, 2005) provides the legal context to support this framing, making a mode of assessment itself a barrier if it does not support a student's learning, for example, requiring handwritten responses when writing is not the learning objective. By failing to remove identified barriers to student learning opportunities, the school is failing in its legal obligation to provide education on the same basis as peers (Bani Odeh & Lach, 2024; Paige *et al.*, 2024).

5. Research Support and Classroom Implications

Wang and Wang (2024) identified consistent evidence that fine motor skills are associated with performance across a range of subjects, including literacy and mathematics, and overall academic achievement, with the relationship particularly strong for early writing tasks. In research conducted by Top (2023) on fine motor skills and attention in children with mild intellectual disability across inclusive and special education settings, the research found that additional difficulties compounded fine motor deficits. This pattern closely aligns with Alex's profile. While Jylänki *et al.* (2022) demonstrate that motor skills

interventions for students with special education needs demonstrated positive effects on cognitive and academic outcomes, suggesting that addressing Alex's motor skills is an academic priority, not merely a welfare concern. OT delivered interventions within a school context are associated with meaningful improvements in participation and academic engagement, supporting the OT's recommendation for continued, school-integrated intervention.

There are several explicit classroom implications across Alex's reports: computer-based or typed-based spelling tasks; double-sided tape or non-slip mats for paper stabilisation; a sloped writing surface and pencil grip aids; seating at the correct table height for postural support; and placement in a quieter setting for focused writing work. However, beyond these, several other implications follow. All academic assessments of Alex's knowledge should, by default, offer an alternative to a handwritten response, for example, oral, digital, or manipulative, unless handwriting is itself the learning objective (Berman & Graham, 2018). The OT notes that Alex's conversation improves during his integration time in the mainstream environment. This improvement implies that motor-inclusive social contexts are important for language and cognitive development beyond what a remedial setting alone can provide. Task length and pacing should be considered reasonable adjustments to accommodate Alex's low muscle tone and the associated experience of writing fatigue, which he experiences more rapidly than his peers

6. Adaptive Behaviour

Berman and Graham (2018) emphasise that adaptive behaviour, what a student does in everyday life, is a distinct construct from intellectual ability as measured by standardised tests. Therefore, the Vineland Adaptive Behaviour Scales (VABS) are a critical complement to Alex's cognitive assessments. The VABS measures habitual real-world functioning through the caregiver rather than a maximum potential summative assessment (Sparrow *et al.*, 1984), which is central to interpreting Alex's profile correctly. Alex's Daily Living Skills score (52, 0.1st percentile) is notably lower than his cognitive scores. The school psychologist's explicit inference that motor skill difficulties are suppressing Alex's Daily Living Skills performance is supported by Dakopolos *et al.*'s (2024) longitudinal study of the relationship between cognition and adaptive behaviour in intellectual and developmental disability (IDD). When these factors are considered collectively alongside Alex's very low Daily Living Skills score, they should not be read as a ceiling on his conceptual potential; instead, they reflect the functional impact of his motor limitations on independence, not a limit on his understanding. This inference is critical to ensure that Alex's knowledge-based learning is not artificially constrained. Conversely, Alex's Socialisation score (72, 3rd percentile) and the VABS communication domain consistently identify social and communication engagement as Alex's strongest functional area. This finding is endorsed across the GMDS personal-Social domain (46 months, the highest GMDS result), the classroom observation data and the OT report, maps directly to the ATRiUM domains of relating to others and using language and

literacy (Berman & Graham, 2018). The classroom implication is that responsive planning and delivery should include cooperative, language-rich, and peer-supported learning formats that are structured to meet motor and written output demands, thereby fostering an engaging and productive learning environment for Alex (Berman & Graham, 2018).

7. Additional Difficulties

Attentional and concentration difficulties are documented as a functional concern across two sources: the classroom observation and the OT parent questionnaire. During the classroom observation, Alex was easily distracted by surrounding activity, losing focus for a substantial portion of the observation, though his teacher readily redirected him. The OT parent questionnaire identified concentration, processing and listening difficulties as parental concerns alongside motor issues. These two sources, drawing on school and home contexts, respectively, provide convergent informal evidence of a generalised attentional pattern. No formal attention assessment is identified in Alex's profile, and this represents a gap in the assessment information. Jacob *et al.* (2021) state that sustained attention during instruction is a primary mediator of the relationship between intellectual ability and academic performance in children with mild intellectual disability. Consequently, the research found that multimodal supports can significantly improve attention span, which would greatly benefit Alex. When evaluating Alex's observations, the difficulty of attending to everything in the room rather than his task supports the theory proposed by Zagaria *et al.* (2021) that individuals with mild intellectual disability show specific deficits in selective attention, including the ability to focus on relevant stimuli while inhibiting irrelevant ones. At the same time, García-Pintor *et al.* (2024) suggest that sustained attention accounted for 40% of the variance in daily living independence among individuals with an intellectual disability, confirming its functional significance.

The explicit recommendation of placing Alex in a quieter setting for written work addresses the attentional concern at the level of environmental adjustment but does not constitute a full response. A more complete approach would include pedagogical strategies, including the use of visual and pictorial task supports; structured task chunking with defined completion points; and, over time, consideration of whether a formal attentional assessment is warranted to determine whether Alex's attentional difficulties exceed what would be expected given his level of intellectual disability. This approach to Alex's attentional concerns would address identifying patterns that should be investigated sufficiently to determine if additional targeted interventions are required to support Alex, rather than leaving them as informal observations (Berman & Graham, 2018).

8. Strengths for Inclusive Teaching

A rigorous synthesis needs to attend equally to identified strengths that will underpin any effective intervention. Across Alex's profile, there is consistent, cross-source evidence of relative strengths in three main areas: general knowledge, verbal and expressive language, and social engagement. The SB5 Knowledge Index of 91 (27th percentile, average range) at age 7 years 1 month is the most important single finding across Alex's assessment profile. This data demonstrates that, despite the challenges Alex faces with fluid reasoning and nonverbal processing, his capacity to accumulate and retain general knowledge through lived experiences and social interactions is age-appropriate (Jacob *et al.*, 2021; Perera *et al.*, 2022). Berman and Graham (2018) position the ATRiUM thinking and understanding domain as the foundation of curriculum engagement, which demonstrates that Alex's capacity in this domain is meaningfully stronger than a single composite IQ score would suggest. Using pedagogical strategies such as discussion, storytelling, and structured questioning is likely to activate the identified strength more effectively than visual, written or procedural formats (Jacob & Pillay, 2022).

9. Convergence, Divergence and Limitations of Inference

There is strong convergence across all six data sources on four propositions: Alex presents with mild intellectual disability that is characterised by uneven cognitive development; fine and gross motor delays constitute systemic barriers to curriculum access across all learning areas; verbal, communicative and social interaction domains are genuine strengths; and motor difficulties are directly suppressing adaptive functioning scores, such that the Daily Living Skills result does not reflect Alex's conceptual ceiling. As this convergence is evident across independent instruments administered by different practitioners across four years, it constitutes a highly reliable basis for planning and for the NCCD judgement documentation that substantive adjustments are required to support Alex in his learning (Berman & Graham, 2018; NCCD, n.d.a.).

As adaptive behaviour scores in children with IDD do not always track proportionally with cognitive development, especially where motor skill difficulties compound functional limitations, careful interpretation of the data is required (Dakopolos *et al.*, 2024). Alex's Daily Living Skills score of 52 should not be used to set lower expectations for knowledge-based learning, as this would constitute a misreading of what the VABS measures, and would contradict the DSE 2005 (Australian Government, 2005) obligation to provide education that allows Alex to realise his potential (Berman & Graham, 2018). There is a risk that the breadth of data available in Alex's profile creates what Graham *et al.* (2018) describe as a deficit narrative, being a cumulative list of limitations that obscures strengths and constrains teachers' expectations. Instead, best practice should be adhered to that stipulates a teacher's role is not to catalogue what Alex cannot do, but to construct a responsive, strengths-based teaching plan that removes barriers and creates a safe and engaging learning

environment in which Alex's genuine competencies in knowledge, language and social engagement can develop (Berman & Graham, 2018; Kleinlein, 2026).

10. Key Technical Terms

Several technical terms appear across Alex's assessment data that require clarification to be accurately translated into classroom practice. A *norm-referenced* assessment compares a student's performance to a representative sample of same-age peers. Hence, a percentile rank of 1 means Alex scored as well as or better than 1% of children his age — not that he answered 1% of items correctly; *standard scores* (mean = 100, SD = 15) and *age equivalents* express this comparison statistically, with Alex's total age equivalent of 4 years 6 months on the SB5 indicating his overall profile resembled that of an average child of that age, while his Knowledge domain age equivalent would be considerably higher (Roid, 2003; Farmer *et al.*, 2023). Mild intellectual disability is defined by an IQ of approximately 55-70 alongside concurrent deficits in adaptive behaviour that are present since childhood; however, it does not preclude meaningful learning, social connection, or growth (Roid, 2003). Adaptive behaviour, as measured by the VABS, refers to what a student can habitually do in daily life, not what they are cognitively capable of; therefore, a low score may reflect motor or environmental barriers rather than an intellectual limitation (Sparrow *et al.*, 1994). Low muscle tone refers to reduced muscle tone, which contributes to Alex's postural instability, grip compensation, and fatigue during sustained writing tasks, and is not a weakness in the conventional sense (Hidalgo Robles *et al.*, 2024). Visual-motor integration is the ability to coordinate visual perception with hand movements, which is central to handwriting, copying, and cutting. Alex's Beery VMI score, which measures the coordination of visual and motor skills is at the 5th percentile at age 7 indicates significant difficulty in this area (Lamb *et al.*, 2023).

11. Conclusion

Alex's assessment profile is multi-method and longitudinal, with evidence-based methods. When all the data is synthesised through the lens of Berman and Graham's (2028) education casework framework and considered with the legal obligations of the DDA 1992 (Australian Government, 1992), DSE 2005 (Australian Government, 2005) and NCCD (n.d.a.; n.d.b.) it produces a clear set of defensible conclusions: Alex has a mild intellectual disability with an uneven cognitive profile in which verbal knowledge and language are genuine strengths; motor difficulties are the most pervasive barrier to curriculum access and must be systematically removed from academic assessment wherever motor production is not the learning objective; Alex's attentional difficulties require environmental management and ongoing review, which may warrant a formal review and Alex's social communicative, and relational strengths are powerful platforms that should be promoted to provide Alex with an inclusive, language-mediated peer rich learning environment.

An inference can be drawn from three areas: the attribution of low Daily Living Skills scores to motor limitations rather than cognitive deficits, the hypothesis of attentional difficulty as a distinct and under-assessed concern, and the risk that standardised assessments systematically underestimate Alex's knowledge and understanding by embedding motor and processing demands into tasks where they are not the intended focus. These inferences are supported by current research and are identified across multiple sources within Alex's profile, but should be treated as a professional hypothesis to be tested and refined through ongoing formative assessment and classroom observation (Berman & Graham, 2018). Classroom teachers must read and interpret multi-source assessment data correctly, as it is their legal and professional obligation to provide an equitable education for students like Alex.

Acknowledgements
The author gratefully acknowledges the support of the University of New England for providing access to academic resources and library services that supported the completion of this research and for providing the case study to examine.

Conflict of Interest Statement
The author declares no conflicts of interest.

About the Author(s)
Mark's passion centres on inclusive education and ensuring every student feels as though they belong, with the opportunity to reach their full potential regardless of their abilities, backgrounds, or circumstances. He believes that education is the cornerstone of social equity and that all learners deserve access to quality, supportive learning environments where they feel valued and capable. Mark recently completed a Master of Education (Special and Inclusive Education) at the University of New England, Australia, and is now completing a Graduate Certificate in Autism Studies at Griffith University. He combines his extensive community engagement experience with evidence-based pedagogical practice, and his research interests focus on inclusive frameworks, relational pedagogy, and practical strategies for embedding equity in mainstream educational

settings. Mark's unique journey from policing to education enriches his understanding of systemic support, collaborative practice, and the importance of building trusting relationships to foster student success and wellbeing.

References

Australian Government. (1992). *Disability Discrimination Act 1992. Federal Register of Legislation*. https://www.legislation.gov.au/Details/C2018C00125

Australian Government. (2005). *Disability Standards for Education 2005. Department of Education*. https://www.education.gov.au/disability-standards-education-2005

Bani Odeh, K., & Lach, L. M. (2024). Barriers to, and facilitators of, education for children with disabilities worldwide: A descriptive review. *Frontiers in Public Health*, *11*, Article 1294849. https://doi.org/10.3389/fpubh.2023.1294849

Berman, J., & Graham, L. (2018). *Learning intervention: Educational casework and responsive teaching for sustainable learning*. Routledge. https://doi.org/10.4324/9780203711675

Dakopolos, A., Condy, E., Smith, E., Harvey, D., Kaat, A. J., Coleman, J., Riley, K., Berry-Kravis, E., & Hessl, D. (2024). Developmental associations between cognition and adaptive behavior in intellectual and developmental disability. *Journal of Neurodevelopmental Disorders, 16*, Article 32. https://doi.org/10.1186/s11689-024-09542-z

Department of Education, Western Australia. (2023). *Inquiry into support for autistic children and young people in schools: Submission to the Education and Health Standing Committee* (Document No. D23/1233353). Government of Western Australia. https://www.parliament.wa.gov.au/Parliament/commit.nsf/luInquiryPublicSubmissions/3F33D3A6EFB1344148258A0E002A2D96/$file/P00087NoCover.pdf

Department of Education, Western Australia. (n.d.a.). *Children with special educational needs.* Government of Western Australia. https://www.education.wa.edu.au/children-with-special-educational-needs

Department of Education, Western Australia. (n.d.b.). *School psychology services.* Government of Western Australia. https://www.education.wa.edu.au/school-psychology-services

Farmer, C., Thurm, A., Troy, J. D., & Kaat, A. J. (2023). Comparing ability and norm-referenced scores as clinical trial outcomes for neurodevelopmental disabilities: A simulation study. *Journal of Neurodevelopmental Disorders*, *15*, Article 4. https://doi.org/10.1186/s11689-022-09474-6

García-Pintor, B., Morales-Rodríguez, F. M., & Pérez-Mármol, J. M. (2024). Attentional resources and independence in basic and instrumental activities of daily living in individuals with intellectual disabilities. *Healthcare, 12*(2), Article 126. https://doi.org/10.3390/healthcare12020126

Graham, L. J., Tancredi, H., Willis, J., & McGraw, K. (2018). Designing out barriers to student access and participation in secondary school assessment. *The Australian Educational Researcher*, *45(*1), 103–124. https://doi.org/10.1007/s13384-018-0266-y

Perera, B., McCarthy, J., & Courtenay, K. (2022). Assessing and managing attention-deficit hyperactivity disorder in people with intellectual disability. *BJPsych Advances*, *28*(6), 363–370. https://doi.org/10.1192/bja.2022.23

Hidalgo Robles, Á., Paleg, G. S., & Livingstone, R. W. (2024). Identifying and evaluating young children with developmental central hypotonia: An overview of systematic reviews and tools. *Healthcare*, *12*(4), Article 493. https://doi.org/10.3390/healthcare12040493

Jacob, U. S., & Pillay, J. (2022). Instructional strategies that foster reading skills of learners with intellectual disability: A scoping review. *Cypriot Journal of Educational Sciences*, *17*(7), 2222–2234. https://doi.org/10.18844/cjes.v17i7.7589

Jacob, U. S., Pillay, J., & Oyefeso, E. O. (2021). Attention span of children with mild intellectual disability: Does music therapy and pictorial illustration play any significant role? *Frontiers in Psychology*, *12*, Article 677703. https://doi.org/10.3389/fpsyg.2021.677703

Jylänki, P., Mbay, T., Byman, A., Hakkarainen, A., Sääkslahti, A., & Aunio, P. (2022). Cognitive and academic outcomes of fundamental motor skill and physical activity interventions designed for children with special educational needs: A systematic review. *Brain Sciences*, *12*(8), Article 1001. https://doi.org/10.3390/brainsci12081001

Kavanagh, H., Issartel, J., Meegan, S., & Manninen, M. (2023). Exploring the motor skill proficiency barrier among children with intellectual disabilities: Analysis at a behavioural component level. *PLOS ONE*, *18*(11), Article e0288413. https://doi.org/10.1371/journal.pone.0288413

Kleinlein, E. (2026). Conceptualising inclusive assessment: A critical literature review at the nexus of education, inclusion, and assessment. *European Journal of Special Needs Education*, *41*(1), 101–120. https://doi.org/10.1080/08856257.2025.2500137

Lamb, A., Yu, M.-L., Chen, H.-L., Wang, T.-N., & Brown, T. (2023). Examining the association between the computer-aided scoring and manual scoring for the Beery Buktenica Developmental Test of Visual Motor Integration (Beery VMI) and children's handwriting skills: A convergent validity study. *Journal of Occupational Therapy, Schools, and Early Intervention*, *18*(1), 25–44. https://doi.org/10.1080/19411243.2023.2275569

Nationally Consistent Collection of Data. (n.d.a.). *What is the NCCD model?* https://www.nccd.edu.au/wider-support-materials/what-nccd-model-1?parent=%2Funderstanding&activity=%2Fwider-support-materials%2Fwhat-nccd-model-1&step=-1

Nationally Consistent Collection of Data. (n.d.b.). *Step 2: What is the level of adjustment?* https://www.nccd.edu.au/wider-support-materials/step-2-what-level-adjustment

Page, A., Barr, M., Rendoth, T., Roche, L., Foggett, J. L., Leonard, C., & Duncan, J. (2024). Making reasonable adjustments for students with disability in Australian mainstream classrooms: A scoping review. *Australasian Journal of Special and Inclusive Education, 48*(1), 46–63. https://doi.org/10.1017/jsi.2024.1

Roid, G. H. (2003). *Stanford-Binet Intelligence Scales, Fifth Edition: Examiner's manual*. Riverside.

Roid, G. H., & Barram, R. A. (2004). *Essentials of Stanford-Binet Intelligence Scales (SB5) assessment.* Wiley.

Sajewicz-Radtke, U., Jurek, P., Olech, M., Łada-Maśko, A. B., Jankowska, A. M., & Radtke, B. M. (2022). Heterogeneity of cognitive profiles in children and adolescents with mild intellectual disability (MID). *International Journal of Environmental Research and Public Health, 19*(12), Article 7230. https://doi.org/10.3390/ijerph19127230

Sparrow, S. S., Balla, D. A., & Cicchetti, D. V. (1984). *Vineland Adaptive Behavior Scales: Interview edition, survey form manual.* American Guidance Service. Retrieved from https://archive.org/details/vineland-2-manual

Top, E. (2023). Fine motor skills and attention level of individuals with mild intellectual disability getting education in inclusive classrooms and special education schools. *International Journal of Developmental Disabilities, 69*(2), 248–255. https://doi.org/10.1080/20473869.2021.1953940

Wang, L., & Wang, L. (2024). Relationships between motor skills and academic achievement in school-aged children and adolescents: A systematic review. *Children, 11*(3), Article 336. https://doi.org/10.3390/children11030336

Wechsler, D. (2002). *Wechsler Preschool and Primary Scale of Intelligence — Third Edition (WPPSI-III).* The Psychological Corporation. https://doi.org/10.1037/t15177-000

Zagaria, T., Antonucci, G., Buono, S., Recupero, M., & Zoccolotti, P. (2021). Executive functions and attention processes in adolescents and young adults with intellectual disability. *Brain Sciences, 11*(1), Article 42. https://doi.org/10.3390/brainsci11010042

Appendix A

Assessment Profile of Alex

Wallangura Public School
State Department of Education

Confidential Report

Name:	Alex Cribbins
Date of birth:	15th October 2009
School:	Wallangura Public School
Date of assessment:	5th and 16th November 2016
Tests used:	Stanford Binet Intelligence Scales Fifth Edition Vineland Adaptive Behaviour Scales Interview Edition
Chronological age:	7 years 1 month

Reason for referral

Alex came for assessment of his intellectual development as part of a review of his schooling. He was previously assessed when enrolled in the early intervention programs in 2012 and when he transitioned to school in 2014.
Alex has a chromosomal abnormality that is associated with delays and disorders in both cognitive and physical development. This was identified at birth and Alex has had careful monitoring and intervention since then.

Alex is now enrolled in a Learning Support Unit, a small group, at Wallangura Public School and is reported to have social difficulty when placed in a large group. He
has been attending integrated sessions in the kindergarten class but seems overwhelmed by the activity and withdraws into himself.

Previous assessment

The Griffiths Mental Development Scales were administered when Alex was just 3 years and then again at 4 years 7 months. On the first occasion Alex's quotient scores ranged from 65 for locomotor skill to 94 for the personal-social and hearing and speech skills. The general quotient was 79. On the second occasion the quotients ranged from 44 for locomotor skills to 83 for personal-social skills. The general quotient was 63. In the nineteen months between the assessments Alex had demonstrated 12 months or less growth in each of the scales.

The Wechsler Preschool and Primary Scales of Intelligence-Third Edition was administered at age 4 years 7 months. Subtest scores ranged from 3 to 6 and his full scale score was 60, Performance composite was 59 and Verbal composite was 70. General Language composite was 70 and processing speed was 65. The scores

suggested a level of mild intellectual disability, although an adaptive behaviour scale was not administered at the time.

Observation at school

A classroom observation was carried out at Wallangura Primary School on the 28th November, 2016. Alex was in a class of six children with a teacher and two special teacher assistants. Alex was familiar with routines, and responded well to instructions. He seeks to please the adults in the room. Alex is very patient and will wait his turn and he speaks up well when required.

He is reported to have difficulty with any task that requires both hands and this was evident during the observation, in writing and pasting activities. Alex also demonstrated some perceptual difficulties with the puzzles he was doing. Alex was very easily distracted from his personal task by what was happening around him. It was easy to draw him back but he lost focus for a lot of the work time. Alex demonstrated a sense of humour in the classroom.

Assessment

The Stanford Binet Intelligence Scales Fifth Edition were administered on the 8th November, 2016. Alex participated well in two hours of assessment, showing mild unsettled behaviour near the end. He engaged well and was responsive to the examiner and to a change in mood at times. Alex showed curiosity and a sense of humour and enjoyed a giggle.

Alex showed inconsistent responses to the Matrices tasks, failing early items but successfully working out later items, after his ceiling was established. This inconsistency in performance was echoed in other areas. Alex relied on modelled strategies and language for the novel tasks and used the language provided by the examiner in introducing the task, to help him attempt later items. Alex used self-talk effectively during tasks, for example, when doing the form patterns he said "I need another eye, where is the other eye?"

Alex showed very inconsistent counting skills. At times he used clear one-to-one matching, while at other times this was not demonstrated. Alex counted to 19 with a few errors and some repeated numbers. Alex had difficulty with the task that required him to construct categories of items from pictures. Even with modelled responses he found it difficult to generate new categories. He tended to find a link between two items and then a link between one of them and another. He could not link all three.

Alex responded to the verbal items in full sentences. He could accurately repeat sentences that had up to ten syllables in them. He repeated a longer one, just changing one word, which did not change the meaning of the sentence. When the next working memory task required some more processing Alex found it much more difficult than direct recall. Alex provided full sentence explanations for the procedural tasks but had to work hard to put his body into the associated actions. Alex had inconsistent success with the formboards. He showed some visual perception difficulties and did not retain in his memory the way to place the two smaller triangles to make the large triangle. He also did not see that the two semi circles could make a circle until he was prompted. Some of his success appeared to be by accident. Alex found it difficult to refer to the reference picture and to check his pattern.

The Vineland Adaptive Behaviour Scales were administered. Alex's mother Alexia was respondent during the interview and to the Parent Rating Form.

Results (Full scores are contained in the APPENDIX at the end of this report)

Alex's intellectual development was assessed using the Stanford Binet Fifth Edition (SB5) on the 5th of November. On this occasion Alex's scores fell within the mildly impaired or delayed range, at the 1st percentile. His verbal score was in the borderline impaired or delayed range (at the 3rd percentile) while the nonverbal score was at the bottom of the mildly impaired or delayed range (at the 0.1st percentile). In comparison to the consistent subtest scores of the WPPSI-III (between 3 and 6), on this occasion the subtest scores ranged from 1 to 9 and showed considerable differences in development. The age ranges were from 3 years 3 months for quantitative reasoning to 6 years 7 months for knowledge. The total score was equivalent to 4 years 6 months, which fits with Alexia's report that Alex's little sister is beginning to show development ahead of Alex in some areas. She is nearly five.

Alex's adaptive behaviour was also assessed using the Vineland Adaptive Behaviour Scales – Interview Edition. Alexia was the respondent for this interview on the 16th of November, and the parent rating form was also used to triangulate the results. Alex's socialisation skills are within the moderately low range at the 3rd percentile. His communication and daily living skills are both in the mild deficit range, at 1st and 0.1st percentiles respectively. Strengths in socialisation and communication were evident in both scales. Motor skills development seems to be impacting on daily living skills development. Consultation with the Children's Hospital resulted in a recommendation for an occupational therapy assessment and intervention.

Alexia reports that an occupational therapist is being consulted at present and has provided some suggestions for motor development intervention. It would be appropriate to seek suggestions for supports for Alex's motor skills in the classroom, as well as provision of advice about how to remove motor skills from some other academic skills lessons so that they do not impede conceptual learning. In particular, the spelling activities could be computer based or typed. Manipulating letters in word processing, or with plastic tiles could be more successful strategies as Alex's reversals and fine motor difficulties become the focus for this task if it uses writing. Alex is also having trouble holding his work with both hands and it slips around. The use of double sided sticky tape or mats to hold work could assist in this area and make paper work more efficient. The occupational therapist may have some more suggestions for this issue.

Conclusions

Alex's performance on this occasion suggests that there is a mild level of intellectual impairment. He has uneven development in his cognitive abilities, with a significant difference in development of nonverbal and verbal domains. Verbal abilities are within the borderline range while nonverbal abilities are in the borderline moderate level of disability. Gross and fine motor skills, as well as perceptual abilities are areas of difficulty. Investigation of Alex's motor skills development through an occupational therapist is occurring.

Alex's strengths in everyday living are in the communication and socialisation domains, while it is evident that motor skills development is impacting on Alex's daily living skills. Motor skills are also a barrier in the classroom. It is important to ensure Alex's difficulties with motor skills are not impeding his learning in other areas such as literacy and verbal knowledge.

Knowledge in both verbal and nonverbal areas is within the average range, and

this area of development needs ongoing nurturing by interactions with children with average levels of language. Opportunities for increased inclusion within a regular classroom could be explored.

Alex is very easily distracted when working in the classroom. He pays attention to everything and loses focus on his work. Alex's table work would be more efficient if he was placed in a quiet setting for a short period to complete set work. This would reduce distraction and allow him to focus more effectively on his written work.

Jane Brown
School Psychologist

APPENDIX **ASSESSMENT RESULTS** **Alex Cribbins**

Stanford-Binet Intelligence Scales - Fifth Edition

	Nonverbal subtests Scaled Scores (Mean 10 SD3)	Verbal subtest Scaled scores (Mean 10 SD3)	Factor Indices (Mean 100 SD 15)	Percentiles
Fluid Reasoning	3	5	65	1
Knowledge	8	9	91	27
Quantitative Reasoning	1	1	50	< 0.1
Visual-spatial Processing	2	7	68	2
Working Memory	1	6	63	1

Fluid Reasoning is the ability to solve verbal and non-verbal problems using inductive and deductive reasoning.
Knowledge is the person's accumulated fund of general information acquired at home and school.
Quantitative Reasoning is an individual's facility with numbers and numerical problems solving, whether with word problems or with pictured relationships.
Visual-spatial Processing measures an individual's ability to see patterns, relationships, spatial orientations or the whole among diverse pieces of visual display.
Working Memory is when diverse information stored in short-term memory is inspected, sorted or transformed.
(Explanations from the Examiner's Manual of the SB5, Roid, 2003:136)

	IQ Scores (Mean 100 SD 15)	Percentiles	Interval (95% confidence)	Descriptor
Nonverbal	55	0.1	51-63	Mildly impaired
Verbal	72	3	67-79	Borderline impaired
Full Scale	62	1	59-67	Mildly impaired

Full Scale IQ includes the ability to reason with both words and visual material, the ability to store and later retrieve and apply important knowledge, broad span of memory for both words and visual details, spatial-visualisation ability and the ability to solve novel problems with numbers and number concepts.
Nonverbal IQ measures reasoning skills in solving picture-oriented, abstract problems, remembering facts and figures presented in visual displays, solving numerical problems shown in picture form, assembling visual puzzles and remembering information presented in visual space, such as the block tapping sequences.
Verbal IQ measures general verbal reasoning ability – solving problems presented in printed or spoken words, sentences, or stories. VIQ reflects the examinee's ability to explain details and events with clarity, verbally justify a rationale for answers to problems, remember details of spoken words and sentences, and explain spatial relationships.
(From: Roid, G. & Barram, B. 2004 Essentials of Stanford-Binet Intelligence Scales (SB5) Assessment. New Jersey: Wiley)

!

Vineland Adaptive Behaviour Scales – Interview Edition

The VABS provides a picture of a child's development in everyday behaviours in communication, daily living skills and socialisation. It is based on an interview with a parent.

DOMAIN or Subdomain	Descriptor	Standard Score (Mean 100, SD 15)	Percentile
COMMUNICATION	Mild deficit	65	1
Receptive	Adequate		
Expressive	Low		
Written	Moderately low		
DAILY LIVING SKILLS	Mild deficit	52	0.1
Personal	Low		
Domestic	Moderately low		
Community	Low		
SOCIALISATION	Moderately low	72	3
Interpersonal relationships	Moderately low		
Play and leisure time	Moderately low		
Coping skills	Moderately low		

CONFIDENTIAL
Early Childhood Assessment Report

Name: Alex Cribbins
Date of birth: 15th October 2009
School: Wallangura Early Intervention Program
Date of assessment: 7th May 2014
Test administered: Griffiths Mental Development Scales

Reason for referral and background information

Alex was referred for an updated developmental assessment by his early intervention teacher and his parents. Alex is due to start school next year and it was felt that a developmental assessment would be useful in identifying his strengths and any areas of concern so that appropriate support could be accessed for school in 2015.

This is Alex's second year in the early intervention program at Wallangura Preschool. He has been attending speech therapy and a recent assessment placed his comprehension at a three year old level. Alex wears orthotics and has regular physiotherapy reviews. His early intervention teacher reports that he struggles to learn new concepts and his receptive language, fine and gross motor skills continue to be delayed. Alex also attends two days a week at Wallangura Preschool.

Assessment of Ability – Griffiths Mental Development Scales

Age at assessment 55.3 months

The Griffiths Development Scales have been developed to measure a child's present level of functioning in six areas: Locomotor, Personal-Social, Language, Eye-Hand Co-ordination, Performance and Practical Reasoning.

Results

			Difference between assessments
Chronological Age in months	Previous assessment 36.3	55.3	+19 months
	Age equivalents		
Locomotor	23.5	24.5	+1
Personal-Social	34	46	+12
Language	34	40	+6
Eye and Hand Co-ordination	24.5	28	+3.5
Performance	24	32	+8
Practical Reasoning	31.2	38	+7.8

Scale A Locomotor: This scale allows the examiner to assess gross motor skills including the ability to balance, and co-ordinate and control movements.

Alex readily had a go at tasks but had difficulty with balance and coordination. He has a trot-like run and is not yet able to run fast indoors. He was able to seat himself at the table and pull his chair in. He walks up and down stairs and can step off a step but not jump off a step with both feet together. He was able to kick the ball from a standing position abut not on the run and throw the ball into the basket. His mother reported that he is not yet able to pedal a bike. He able to cross both feet and knees when seated but he used his hands when rising form kneeling. He was not able to stand on one foot for 6+ seconds nor walk tip-toe for 6+ steps.

Alex's gross motor skills are approximately at a 24.5 month level.

Scale B Personal-Social: This scale allows the examiner to assess the child's proficiency in the activities of daily living, level of independence, and the ability to interact with other children.

Alex is able to dress and undress himself but cannot do difficult fastenings. He can put on his socks but not his shoes. His mother reported that he can use a spoon and fork at the table but prefers finger food. He is putting away toys when encouraged. Alex is toilet trained. He was able to give his name, age, and gender on request. He was able to point out parts of the body and can tell his experiences. He is able to open a door by himself. His mother reported that he is co-operating in play with other children, washes his own face and hands and helps to set the table.

Alex's personal-social skills are approximately at a 46 month level.

Scale C Language: This scale allows the examiner to assess the child's receptive and expressive language.

Alex was an obliging little boy who chatted constantly throughout the assessment. He was able to identify 12 of the objects in the box and define six of these by use. He named 15 of the little pictures and enjoys looking at books. He names 9 objects in the large picture but was only able to name one colour. He is using descriptive words and pronouns. He was able to repeat a 6 syllable sentence. He was able to answer one of the comprehension questions and one of the opposites questions. Alex likes to talk and engage with his listeners and it would seem that his keenness to communicate (expressive language+ and social be nature is masking some of his understanding (receptive language) delays.

Alex's expressive and receptive language skills are approximately at a 40 month level.

Scale D Eye and Hand Co-ordination: This scale allows the examiner to assess the child's fine motor skills, manual dexterity and visual perceptual skills.

Alex used a right handed high grip. He was happy to do the drawing tasks and he followed the instructions to copy a perpendicular strike he was unable to copy a square or circle and he did not demonstrate the ability to do circular scribble. He was able to do a line scribble. He was keen to use the scissors, snipping the paper but not yet able to cut into two fairly equal pieces. He was not able to copy folding a square paper in half. He built a tower of 8 bricks and was pleased with his efforts. He tried the bead threading but was unable to thread any of the beads, even after several tries. He was able to copy building a train.

Alex's fine motor skills are approximately at a 28 month level.

Scale E Performance: This scale allows the examiner to assess the child's manipulation skills, including speed of working and precision.

Alex was able to assemble the brick boxes by colour and assemble the screw toy. He completed the three piece blue form board with the rotation and the timed 4 hole board within one minute time limit. He attempted the 6 and 11 hole puzzles but was not able to complete them in the one minute time limit. Alex was not able to copy the building the bridge for the train, unable to balance the boxes for the bridge.

Alex's visuo-motor problem solving skills are approximately at a 32 month level.

Scale F Practical Reasoning: This scale allows the examiner to assess the child's ability to solve practical problems, understanding of basic mathematical concepts and questions about moral and sequential issues.

Alex was able to repeat a 1 and 2 digit number but not the 3 and 4 digit numbers. He knows money and he was able to compare insets for size. He was able to compare towers for height but not lines for length or weights. He was able to count to 4.

Alex's practical reasoning skills are approximately at a 38 month level.

Summary of Assessment Results

Alex was a happy and obliging little boy who tries his best during the assessment. Developmental assessment on this occasion indicates that Alex's cognitive and motor skills range from 24.5 months on the Locomotor Scale to 46 and 40 months on the Personal Social and Speech and Language scale. His delayed gross and fine motor skills significantly affected his overall performance.

The overall assessment score indicated that he is in the mild delay range for his cognitive and motor skills. His gross and fine motor skills are significantly delayed. There are also some mild delays in his visual problem solving. Though Alex has made gains in most areas since his previous assessment, these gains are not in line with his peers and it will be important for him to access support in primary school to maximise his learning opportunities.

Wechsler Preschool and Primary Scales of Intelligence Third Edition

The WPPSI-III) is designed to be used with children age 2 years 6 months to 7 years 3 months. The WPPSI-III consists of 14 subtests. There are 7 core tests, 5 supplemental tests and 2 optional tests. These are divided into a Performance and Verbal section. The performance subtests measure practical ability involving visual and spatial perception and eye-hand co-ordination. The verbal subtests assess language related skills. The tests provide a performance, verbal and full scale intelligence quotient. The two optional tests provide a measure of expressive and receptive vocabulary ability in older children. This enables a general language composite (GLC) to be calculated.

The WPPSI-III yields a profile of a child's cognitive abilities. An IQ score of 100 ± 10, and scales scores of 10 ± 3 are in the average range.

Results

Alex came happily to do the assessment. His mother and younger sister waited outside the assessment room. Alex was enthusiastic and eager to please and participate. He sat co-operatively in his chair for the one hour session, not needing a break. He was very talkative to the point of distracting himself from the task at hand and missing the directions. He was persistent with tasks even as they became more challenging and always gave his best. Alex is not yet writing his name and he had difficulty understanding what was required in the Coding task and using the pencil to make the appropriate marks.

Test results were as follows:

	Standard Score Mean of 100, SD of 15	Percentile	Classification range
Full Scale	60	0.4	Mild disability range
Performance	59	0.3	Mild disability range
Verbal	70	2	Borderline range
Processing Speed	65	1	Mild disability range
General Language Composite	70	2	Borderline range

Performance subtests	Scaled score Mean 10 SD 3	Verbal subtests	Scaled score Mean 10 SD 3
Block Design	4	Information	4
Matrix Reasoning	3	Vocabulary	5
Picture Concepts	3	Word Reasoning	4
Picture Completion	6	Comprehension	6
Object Assembly	4	Similarities	N/A
Processing Speed subtests	Scaled score Mean 10 SD 3	GLC subtests	Scaled score Mean 10 SD 3
Symbol Search	4	Receptive Vocab	5
Coding	3	Picture Naming	4

Summary of Assessment Results

Assessment indicated that Alex's overall intellectual ability is in the mild intellectual disability range. There was little scatter between subtests scores which ranged from 3 to 6. Alex's performance score was at the 0.3 percentile, his Verbal score at the 2nd percentile and General Language Composite 2nd percentile. His overall test score was at the 0.4 percentile. This is consistent with scores on the Griffiths Mental Development Scales administered earlier this month.

Recommendations

Application be made for placement in a special education group program to provide support for Alex's learning at school. Family to visit options in order to select preference.

Speech therapy, physiotherapy and occupational therapy to continue.

Allen Bridges
Early Childhood Assessment Team Psychologist
May 2014

Paediatric Occupational Therapy Services

Occupational Therapy Assessment

Name: Alex L

Date of Assessment: 21/11/16

Date of birth: 15/10/2009

Age at assessment: 7 years 1 months

School: Wallangura Public School Year 1

Teacher: Ms Ablet

Reason for referral: Assessment, difficulty with fine motor and pencil skills

Other services currently used: Speech therapy, Physiotherapy

Assessment Tools Used

The assessment consisted of an interview with Alex's mother, Alexia, with the aid of a parent questionnaire concerning Alex's past development as well as his current difficulties.

Age appropriate items from the following:

- Clinical observations , e.g. walking, copying posture
- Brigance Developmental Inventory, Mary Sheridan Profile
- An observation of drawing
- An observation of handwriting

Standardised assessments:

- Beery Buktenika Visual Motor Integration Test

Results of the Assessment

Presentation during the assessment:

During the assessment Alex was friendly, cheerful and co-operative. He needed help to stay on task and concentrate, but he completed all of the activities presented.

Main concerns identified by parents in the questionnaire:

Alex has been assessed as being "mildly" developmentally delayed and his parents report difficulties across a range of skills including gross motor, fine motor and pencil skills. Self-help skills (shoelaces, cutlery, buttons) organizational, concentration and listening/processing skills and also difficulties with self-confidence and making friends. Nonetheless, they report that his expressive language and comprehension

are his strengths and that there are no behavioural problems. Today he showed a gentle and even temperament and he was a pleasure to work with.

GROSS MOTOR SKILLS – large movements

Skills which were observed today have been ticked

Skills Observed	ACHIEVEMENT LEVEL FOR AGE		
	Significant Difficulty	Slight Difficulty	Satisfactory
Catching and throwing a basket ball (3½-5yr skill) Comment: At first Alex caught the ball underneath with his arms (instead of on the side) and flinching significantly when catching. He improved with practice	ηττπ://υνε–εδυ–π ριμο.ηοστεδ.εξλι βρισγρουπ.χομ/π	℘ with practice	
Catching and throwing a tennis ball with 2 hands (6yr skill)	℘		
Jumping		℘	
Hopping 2–3 metres (5yr skill)	Left foot ℘ Right foot ℘		
Balancing 8–10 secs (5yr skill) Comment: Alex wears orthotics in his shoes	Left foot ℘ Right foot ℘		
Copying Postures Comment: Alex had some difficult with complex postures involving crossing his midline		Left foot ℘ Right foot ℘	

FINE MOTOR SKILLS – fairly precise hand movements

Skills which were observed today have been ticked Alex is right handed. Alexia reports

that Alex sometimes leads with his left hand
(though not for writing or cutting out) and that he has some difficulty with activities involving co-ordinating both hands together.

Skills observed	ACHIEVEMENT LEVEL FOR AGE		
	Significant Difficulty	Slight Difficulty	Satisfactory
Beery – Buktenika Visual Motor Integration Test Age Equivalent Score = 5yr 2m	√		

Percentile = 5th That means that he scored as well as or better than 5% of children his age			
Drawing a person (at 4 yrs expect a face with features and single line arms and legs, at 5 yrs expect head expect head, facial features, trunk, legs and arms, at 6 to 7 yrs expect more details)		√	
Cutting out √ Square (4 yr skill) Circle (5 yr skill) Wavy line (6 yr skill) Comment: At first Alex did not turn at the corners of the squares, but he managed when given appropriate strategies.	√ initially	√ with practice	
Copying Block Designs 3 steps from 6 blocks (5 yr skill) √ 3 steps from 6 blocks after demonstration (4 yr skill) √ Red blue green x 2 block design (45 yr skill)	√	√	
Puzzle completion √ 6 piece interlocking puzzle (4 yr skill) √ 9 piece interlocking puzzle (5 yr skill) 16 piece interlocking puzzle (6 yr+ skill) 25 piece interlocking puzzle (7 yr+ skill) Comment: At times Alex tended to rely on the shape of the puzzle pieces for his cues or on trial and error instead of relying on the picture for cues to complete the puzzle	√	√	
Finger thumb touching √ While looking (4 yr skill) With hands covered (5 yr+ skill)	√		

HANDWRITING

Hand Dominance: Right

Type of Pencil Grip: Alex held his pencil using a Tripod Grip i.e. his pencil was held between the tips of the thumb and index finger and the side of the middle finger. At times his pencil was in a rather upright position, which can cause additional strain and fatigue.

Strength of Grip:
√ Appropriate

Pressure used when writing:
√ Appropriate

Writing Style bearing in mind student's age: Alex writes from left to right. While his letters are fairly even in size, he does not place them consistently on the line. He made a good attempt at the several letters of the alphabet and managed a, c, d, e, m, o, z and numbers 1, 3, and 8 accurately.

SELF HELP SKILLS

Alex has some difficulties with managing cutlery and shoelaces and I have made some recommendations below.

SUMMARY AND RECOMMENDATIONS

Alex was referred to Occupational Therapy because of difficulty with a range of skills associated with his diagnosis of mild intellectual delay.
When I assessed him he was friendly, cheerful and co-operative. Today Alex managed skills at a level, which is consistent with his diagnosis, managing them at a 4 to 5 year level. Pleasingly, he responded well to strategies suggested and improved some skills during the session. Some of Alex's difficulties are likely to be at least partly associated with low muscle tone.

Muscle tone is the elasticity or tension in a muscle when it is at rest, (rather than when it is contracted) and it contributes significantly to stability in all of the joints. Muscle tone also helps posture to be stable without making continuous effort. Stable posture is an important base for fine motor skills. Muscle tone is normally lower in children than in teenagers and adults. Low muscle tone is often associated with a very relaxed or lopsided sitting posture, with a tight pencil grip (the tightness of the grip is an effort to compensate for a lack of stability) and with slight hand tremor. This is also associated with very mobile joints and often finger joints that bend back slightly, with a tendency to tire easily with sport or physical exertion and with flat (or pronated) feet. Low or moderate impact exercise (including Tai Kwon Do and horse riding) helps to improve muscle strength and tone and appropriate seating helps to reduce unnecessary stress on a person's posture. I have made some specific recommendations about his below.
I have made an appointment to see Alex on Friday 18th January at 11:15am to help him with his skills and I have also made the following recommendations:

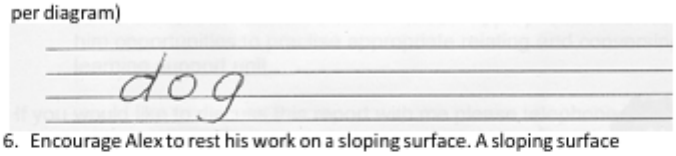
1. Continue to encourage the use of "The Pencil Grip" available from Little Red Engine for $2.95. Place the straight end at the tip of the pencil. Right-handers place their thumb on the side marked R.

2. Sometimes reduced pencil control is associated with poor strength and stability in the shoulders, arms and hands. The following exercises can help improve shoulder and arm stability:
   - Stand 30-40 cm form a wall. Place your hands on the wall a little below shoulder height. Do 10 slow push-ups against the wall.
   - Do crab walks or wheelbarrow races (be diagram below)
   - Do are exercises with a ½ kg weight in each hand. Move straight arms to the side till they are vertical 5-10 times and do the some moving the arms forward. Then reach the arms out to the side and bend them at the elbows 5 times.

3. Encourage drawing on a blackboard or some other vertical surface. Talk about "standing up lines", "lying down lines and "slippery dip" or sloping lines to encourage the development of clear concepts about different lines. These concepts should easily transfer to drawing and writing on paper.

4. Help Alex to learn the names of the letters of the alphabet by playing letter lotto and with computer programs such as "Letterland" and Phonics Alive 1.

5. To help with letter proportions, describe letters as sitting in the sand only, or sitting in the sand and reaching up to the sky or putting their toes in the sea (as per diagram)



6. Encourage Alex to rest his work on a sloping surface. A sloping surface helps to position the wrist in an appropriate position (straight rather than bent), as well as promoting a comfortable pencil grip (with the pencil pointing towards the shoulder). It also promotes and even posture. Foolscap or A4 folders can provide such a surface.

7. b's and d's can be differentiated by remembering that a "d" for dogs starts like a "c" for cat and that a "b" is for bat and (then) a ball. As well when both hands are held in fists, the thumb straight up, so the left hand looks like a "b", and the right like a "d", the two hands together look like a bed. "b" for bed is represented by the left hand and "d, at the end of the bed is

represented by the right hand. Another clue to remember "b" is that "b" is for birthday, birthdays happy so a "b" can start with an "h" (for happy).

8. Activities at a table or desk, including writing, will be most comfortable and easiest if the table or desk is at elbow height or a few centimetres higher when sitting at the table, with arms hanging down loosely. When using a knife and fork the chair seat should be higher so that the table is at elbow height, or a few centimetres below.

9. When cutting out a square or shape with corners, encourage Alex to STOP at the corners, TURN , hold the paper with the scissors, and move the hand which holds the paper around the picture. A red dot on the corners (a "stop light") can remind Alex to turn at the corners.

10. Encourage Alex to catch a large ball on the side of the ball (instead of underneath) and to return it with a chest pass – with finger pointing upwards and throwing the ball forward.

11. To reduce flinching when catching a ball, gently tap Alex with the ball, near his face and shoulders and zoom in with it (while holding it). Encourage him to watch the ball all the way, and trying to stop blinking.

12. When teaching Alex to tie shoelaces, try using 2 different coloured laces that are flat and easily long enough. Fasten the laces to a box that can have a treat placed in it (e.g. a tea bag box) and have him learn to tie them at a comfortable height, e.g. on a table. (Today I showed Alex some strategies for tying laces).

13. When Alex plays with jigsaw puzzles, encourage him to look at it carefully before tipping it out. Ask him to tell you what is in the picture, what is at the top and what is at the bottom of the picture. After tipping it out, ask Alex to look at each piece when he picks it up and to turn it around so the picture (or picture part) is the correct way up. Help him to recognize which pieces fit into the corners of the puzzle, and then the sides of the puzzle.

14. Consider buying "Extend-a-care" (or Caring) cutlery. This is adult sized, moulded cutlery available at Amcal Chemists. They cost $18 to $22.50 each. As well, ensure that the chair is sufficiently high for eating or working at a table. The table should be at elbow height (measured sitting on a chair, with arms hanging down). Alternatively, cutlery with fairly thick handles (e.g. the Melamine handles) are usually easier to use than cutlery with thin metal handles. It may be helpful to encourage good cutlery use while eating pancakes (or similar) for afternoon tea, instead of at dinner time when people are tired and may not be as interested in the food.

15. Alex's easy going nature and appropriate behaviour suggests that he could benefit from significantly more integration time at school, without causing

difficulties in the classroom. Alexia reports that Alex has two hours integration with a Kindergarten class per week and that his conversation improves significantly when he has integration time. Although he may not be able to keep up with the class from an academic point of view, it is important for him to have time with children who model appropriate behaviour and conversation, and give him opportunities to practise appropriate relating and conversing, which may be limited in his learning support unit.

If you would like to discuss this report with me please telephone.

Belinda Curtis
OCCUPATIONAL THERAPIST