

Institution: Bangor University, 10007857		
Unit of Assessment: UoA 4 - Psychology, Psychiatry and Neuroscience		
Title of case study: Multilanguage Assessment Battery of Early Literacy (MABEL): A web-based resource for diagnosing literacy skills in various monolingual and bilingual settings		
Period when the underpinning research was undertaken: 2008 - 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s): Dr Markéta Caravolas	Role(s) (e.g. job title): Reader in Psychology	Period(s) employed by submitting HEI: September 2008 - present
Period when the claimed impact occurred: 2018 - 31 December 2020		
Is this case study continued from a case study submitted in 2014? N		
1. Summary of the impact		
<p>Low literacy attainment affects one in five 15-year-olds in Europe, with consequences for a range of long-term prospects, but may be averted with early diagnosis of risk and timely interventions. A Bangor-led international group of researchers developed the Multilanguage Assessment Battery of Early Literacy (MABEL) - the first freely-available, web-based resource, uniquely offering a battery of tests across five languages for monolingual, bilingual, and second language assessment. Primary beneficiaries of MABEL since September 2019 are 750 practitioners in 22 countries previously lacking objective, high quality, evidence-based assessments for early detection of children's risk for, and manifestations of, literacy failure.</p>		
2. Underpinning research		
<p>An estimated 20% of the global population are completely illiterate with a further three billion people struggling with basic reading and writing. This costs the global economy approximately GBP800,000,000,000 each year and causes long-term personal and social impacts on a person's quality of life. Educational policy in most European countries requires early identification of literacy difficulties in order to implement interventions to avert or alleviate children's reading and spelling problems. However, many educational and clinical contexts lack assessment tools for early detection.</p> <p>A Bangor-led international group of researchers addressed this need by developing the Multilanguage Assessment Battery of Early Literacy (MABEL) offering appropriate, evidence-based test packages. MABEL arises from the first longitudinal, multilanguage study of early literacy development, Enhancing Literacy Development in European Languages (ELDEL), a five-year programme led by Bangor's Markéta Caravolas and funded by the European Commission [3.a]. ELDEL colleagues from England (University of York), Wales (Bangor University), Spain (University of Granada), France (Universities of Clermont Ferrand and Poitiers) Czech Republic (Charles University), and Slovakia (Comenius University), investigated key theoretical and empirical issues, including the universals and specifics of typical literacy development, and identification of cognitive risk factors for poor literacy development. Caravolas led the critical design and creation of a reliable, carefully-matched, cross-linguistically valid tool for measuring individual differences in literacy attainment (reading and spelling skills) as well as for assessment of cognitive abilities as markers of risk of literacy difficulties in young children.</p>		

Between 2008 and 2012, 907 children were followed simultaneously across ELDEL countries with twice yearly parallel tests of literacy and literacy-related skills development. ELDEL's, Bangor-led, key published research findings underscoring the validity of the MABEL battery include:

Universal precursors of early literacy: A study of the foundations of literacy [3.1] tracking children from mid-Kindergarten/Reception Year to mid-Grade 1, confirmed that individual differences in reading and spelling ability in 1st grade were strongly and similarly predicted by three skills measured prior to, or at the start of, schooling in English, Spanish, Czech and Slovak. The skills were **knowledge of alphabet letters**, awareness of speech sounds (phonemic awareness), and the ability to name visual objects quickly (**oral naming fluency**). These skills have since been shown to continue their long-term influence on reading comprehension skills through to second grade [3.2].

Language-specific differences in rate of learning to read: Studies of the development of reading from Kindergarten through to the end of 2nd grade [3.2, 3.3, 3.4] demonstrated that **various word reading skills are acquired more quickly** in consistent orthographies (Spanish, Czech, Slovak) than in English. However, despite the learning advantages of consistent orthographies, letter knowledge, phonemic awareness, and oral naming fluency predict reading success or difficulty across **all** languages.

Universals and language-specifics in assessing spelling development: As with reading, children's attainments in spelling are predicted by the same trio of foundational skills, irrespective of the orthography being learned [3.1]. Further studies [3.5] showed for the first time that despite the myriad differences in the spoken and written features of languages, the patterns of learning to spell are broadly universal, and can be assessed with measures suitable for direct cross-linguistic comparisons of orthographic knowledge.

Sensitivity and specificity of the MABEL battery: A discriminant function analysis showed MABEL to surpass established thresholds for excellent sensitivity and specificity in differentiating between British-English groups with and without dyslexia [3.6].

This body of international work led by Bangor University confirms the universal nature of the cognitive underpinnings of early literacy that are observable when relevant language and literacy skills are measured with high quality, clinically sensitive, and parallel tests across languages.

3. References to the research

Research Outputs

3.1 **Caravolas, M.**, Lervåg, A., Mousikou, P., Efrim, C., Litavsky, M., Onochie-Quintanilla, E., Salas, N., Schöffelová, M., Defior, S., Mikulajová, M., Seidlová-Málková G., N. V. and Hulme, C. (2012) Common patterns of prediction of literacy development in different alphabetic orthographies. *Psychological Science*, **23**(6), 678-686. [DOI](#) (Peer-reviewed journal article)

3.2 **Caravolas, M.**, Lervåg, A., Mikulajová, M., Defior, S., Málková, G. S. and Hulme, C. (2019) A cross-linguistic, longitudinal study of the foundations of decoding and reading comprehension ability. *Scientific Studies of Reading*, **23**(5), 386-402. [DOI](#) (Peer-reviewed journal article)

3.3 **Caravolas, M.**, Lervåg, A., Defior, S., Seidlová Málková, G. and Hulme, C. (2013) Different patterns, but equivalent predictors, of growth in reading in consistent and inconsistent orthographies. *Psychological Science*, **24**, 1398-1407. [DOI](#) (Peer-reviewed journal article)

3.4 **Caravolas, M.** (2018) Growth of Word and Pseudoword Reading Efficiency in Alphabetic Orthographies: Impact of Consistency. *Journal of Learning Disabilities*, **51**(5), 422-433. [DOI](#)

3.5 Salas, N., and **Caravolas, M.** (2019) Dimensionality of early writing in English and Spanish. *Journal of Literacy Research*, **51**(3), 272-292. [DOI](#) (Peer-reviewed journal article)

5.6 Downing, C., and **Caravolas, M.** (2020) Prevalence and Cognitive Profiles of Children with Comorbid Literacy and Motor Disorders. *Frontiers in Psychology*, **11**, 573580. [DOI](#) (Peer-reviewed journal article)

Grants

3.a. **Caravolas, M.** (2008 - 2012) *Enhancing Literacy Development in European Languages (EDEL)*. European Commission, Framework Programme 7, FP7-PEOPLE: Grant agreement ID: 215961. Full award, Bangor lead coordinator, EUR3,752,311 (09-2008), GBP651,036 (Bangor University: R25718)

4. Details of the impact

Bangor's Caravolas has directed the development and adaptation of the Enhancing Literacy Development in European Languages (ELDEL) test materials into a 15-test battery - the Multilanguage Assessment Battery of Early Literacy (MABEL). MABEL has been produced in parallel in English, Spanish, Czech, Slovak, and Welsh, hosted on language-specific web sites. With 9 of MABEL's tests evaluating cognitive risk markers of concurrent or later-emerging reading and spelling difficulties and another 6 tests measuring reading and spelling skills themselves, the MABEL battery can be used in part to assess specific skills, or as a comprehensive early literacy evaluation.

MABEL is the only multi-lingual battery for assessing monolingual, bilingual, and second language learners of any combination of the MABEL languages. Additionally, MABEL is the **only available** norm-referenced diagnostic battery specifically focusing on early literacy and related skills in Czech, Slovak and Welsh and is now being used by a broad range of practitioners.

Impact is claimed between 31 August 2019 and December 2020, and is preceded by conferences and symposia and dissemination to practitioners on the theoretical and empirical basis of the MABEL resource from September 2018 to June 2019. There were significant delays in impact acceleration due to COVID-19 as a result of school closures internationally, between March 2020 and August 2020.

Uptake by primary beneficiaries (literacy practitioners): The greatest uptake to date is in Slovakia, with 370 users representing approximately 80% of the country's special educational needs and speech and language pathology assessment clinics [5.1, 5.2]. In the Czech Republic 148 practitioners are using MABEL across 48% of Czech specialist assessment centres [5.3, 5.4]. In countries at more recent stages of roll out, the distribution is UK with 86 users (of which 59 in Wales) representing 15 local authorities [5.5], and Andalucia, Spain with 25 users to date [5.6, 5.7]; these numbers represent approximately **10% to 25%** of the eligible professionals using the tool **even at this early stage**. As part of the computer assisted assessment of phoneme awareness skills using MABEL, online versions of 2 gold standard tasks (Phoneme Deletion and Phoneme Blending) have been developed in collaboration with the Psychometrics Centre at Cambridge University [5.8]. The tool is independently promoted in the UK by 'RealLearners', a company committed to supporting children learning English [5.9].

Uptake in "non-MABEL" countries: Additionally, **75** subscribers (literacy practitioners / teachers) from **15** different countries such as Canada, Australia, France and Hong Kong, use MABEL to carry out assessments for children who are learning in English in addition to the home language. The Spanish version of MABEL is being used by practitioners in Spanish-speaking countries in Central and South America, in particular Argentina (85 users) [5.10], where MABEL represents the first battery of its type.

Website impact indicators: Interest in and uptake of the tool is progressing rapidly and has received **103,703 hits** by **26,094 visitors** between August 2019 and December 2020. Between the 750 registered users, **6,843 test packs have been downloaded** to date. Approximately 25% of registered users have accessed at least 2 and often even 3, language versions in their assessments, confirming the multilingual benefits of the MABEL tool. Further, a survey of 120 users across the main countries revealed that the majority used either the whole battery (70%), or approximately half of its 14 tests (30%) and most use the tests on a regular basis (at least once per week 34%; at least once per month 44%). The survey also confirms that MABEL is being used by a broad range of practitioners, especially where suspected literacy difficulties are confounded

with imperfect command of the language of school learning: educational psychologists (47%); qualified specialist teachers in schools (22%); speech and language pathologists (9%); and academic research settings (7%). The level of the tool's utility for their clinical practice reported by the users was extremely high (91%)

Students: Approximately **110** final-year students of professional degrees such as Speech Therapy, Educational Psychology, Specialist Dyslexia diploma, from 7 countries (England, Wales, France, Slovakia, Czech Republic, Spain and Argentina) have also registered for MABEL, under the supervision of their academic mentor. These students represent the next generation of practitioners who will have MABEL as part of their starting professional testing repertoire.

Accreditation of MABEL training courses: The MABEL researchers, led by Bangor's Caravolas have created a one-day training course for practitioners on best clinical usage of the MABEL battery. 5 courses have been delivered between May 2019 and February 2020: Bratislava (Pan-European University, **55** and **65** participants), Prague (Charles University, **30** participants) and Bangor (Bangor University, **26** and **18** participants) with **100%** of attendees subscribing to use the tool. A one-day training course has also been presented at Comenius University in Bratislava to **40** Speech and Language Therapy students and at Pan-European University to **20** Clinical Psychology students. The training course has been **accredited** by the **Chamber of Slovak Psychology Association** for 8 CPD credits; the **Czech Ministry of Education**, and the **Miles Dyslexia Centre** by affiliation with the **British Dyslexia Association** (and thereby also with the Professional Association of Teachers of Students with Specific Learning Difficulties (**PATOSS**)) for 7 CPD credits.

Example of MABEL's success: A longitudinal study of Czech and Slovak child populations at family risk of dyslexia [5.11], demonstrated MABEL's core foundational predictor skills to clearly differentiate groups who went on to develop reading and spelling difficulties in primary school.

5. Sources to corroborate the impact

5.1 Testimonial from President of Slovenská asociácia logopédov [Slovak Association of Logopeds] (participant in the impact process) testifying the uptake of MABEL by Slovak Speech and Language Therapists (SLTs) by the principle Slovak accrediting body, that MABEL represents a unique battery of early literacy in Slovak, and that they hosted a MABEL symposium.

5.2 Testimonial from Chair of Asociácia špeciálnych pedagógov škôl a poradní [Association of Special Needs Educators in Schools and Clinics] (reporter on the impact process) corroborates uptake of MABEL by Slovak Special Educational Needs (SEN) teachers as a unique battery of early literacy in the Slovak language. Specific interest in the broad uptake and usage of the battery for early detection of reading problems in schools.

5.3 Testimonial from Director of DYS-centrum Praha z.u. [National association for Dyslexia in Czech Republic] (participant in the impact process) corroborating the uptake and importance of MABEL for Czech SEN and Educational Psychology (EP) practitioners as a unique battery of early detection of dyslexia in the Czech language.

5.4 Testimonial from Chair, Educational Psychology, Czech-Moravian Psychological Society (reporter on the impact process) confirming the uptake and importance of MABEL for Czech EPs and Psychologists, as well as Developmental Researchers, as a unique battery of early assessment of literacy and early detection of dyslexia in the Czech language.

5.5 Testimonial from Coordinator of Additional Learning Needs and Inclusion (Gwynedd & Isle of Anglesey) (participant in the impact process) confirming the importance of MABEL for Welsh Special Educational Needs Coordinators (SENCOs) and Dyslexia Specialists, as a unique battery enabling direct comparison of early assessment of literacy and early detection of dyslexia in Welsh and English; especially focused on North West Wales.

5.6 Testimonial from Coordinator of Grupo Comunicarnos (reporter on the impact process) confirming the importance of MABEL for Spanish EPs, SLTs and SEN practitioners working throughout Spain, as a unique battery of early assessment of literacy and early detection of dyslexia in Spanish. This testimonial is in Spanish (English translation available on request).

5.7 **Testimonial from President of GRANDYS** [The Dyslexia Association for Andalucia] (reporter on the impact process) confirming the importance of MABEL for Spanish EPs and SEN practitioners and Dyslexia Specialists working throughout Andalucia province of Spain, as a unique battery for early detection of dyslexia in Spanish. This testimonial is in Spanish (English translation available on request).

5.8 **Website from the Psychometrics Centre (University of Cambridge)** corroborating collaboration with speech and language researchers at Bangor University to develop computer-assisted assessments of phoneme awareness skills for the MABEL tool.

<https://www.psychometrics.cam.ac.uk/client-showcase/mabel-phoneme-awareness-tests>

5.9 **REAL Learners (Resources for learning English) website** - How Can MABEL Help Bilingual Assessment? corroborates the utility and uniqueness of MABEL as a tool for assessment in English as an Additional Language (EAL) children and the value of being able to test in first and additional languages. <https://www.realleaders.co.uk/how-can-mabel-help-bilingual-assessment/>

5.10 **Testimonial from Coordinator of Indago** [Argentinian Clinic for psychoeducational assessment] (participant in the impact process) confirming the importance of MABEL for Spanish EPs, SLTs and SEN practitioners working throughout Argentina, as a unique battery of early literacy and for early detection of dyslexia in Spanish.

5.11 **Research showing the use of MABEL in dyslexia prediction** (Moll, K. *et al.* (2016) Precursors of Reading Difficulties in Czech and Slovak Children At-Risk of Dyslexia. *Dyslexia*, **22**(2), 120-136).

<https://onlinelibrary.wiley.com/doi/abs/10.1002/dys.1526>