

## WHITE PAPER

# BrainPulse™

Transforming Study Materials into Personalised Learning Experiences for Neurodivergent Individuals Through AI and Evidence-Based Design

Platform

CohenHallowell BrainPulse™

Version

1.0: Public Release

Availability

Q2–Q3 2026

Classification

Public: For Distribution

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## Executive Summary

One in five individuals worldwide is neurodivergent. Standard educational materials, designed for a narrow neurotypical norm, fail them every day. BrainPulse™ directly addresses this gap.

CohenHallowell's BrainPulse™ is a proprietary AI-powered platform that allows students, learners, and individuals of all ages to upload standard study or course materials and receive a fully personalised, neurodivergence-adapted learning experience in return. The system is grounded in peer-reviewed research, built on modern machine learning infrastructure, and governed by a rigorous evidence-based content transformation protocol.

Where conventional EdTech platforms offer accessibility features as an afterthought (larger fonts, read-aloud buttons, extended time), BrainPulse™ rebuilds the entire learning experience from the ground up around the specific cognitive, sensory, and executive function profile of each learner. The result is not a modified version of a standard course; it is a fundamentally different educational experience, purpose-built to reflect how that individual brain processes, retains, and expresses knowledge.

### 1 in 5

people are  
neurodivergent  
worldwide

### 15–20%

of the population  
has dyslexia

### 8%

of children globally  
have ADHD

### \$7.3T

global EdTech  
market by 2030

### Key takeaway

BrainPulse™ is not an accommodation. It is a transformation. Any study material, including a textbook chapter, a PDF, a lecture transcript, or a course module, becomes a structured, evidence-based, multimodal learning journey tailored to one of seven neurodivergent profiles.

Platform availability: Q2–Q3 2026.

## What BrainPulse™ Delivers

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- A seven-profile neurodivergence adaptation engine covering ADHD, Dyslexia, Autism Spectrum Disorder, Dyscalculia, Dysgraphia, DCD/Dyspraxia, and Twice-Exceptional learners
- An AI transformation pipeline that restructures any study material into a rendered sequence of typed content nodes: cards, audio clips, worked examples, interactive manipulatives, and more
- A research-grounded design framework derived from over 30 peer-reviewed studies, government reports, and institutional guidelines published between 2000 and 2025
- 16 content node types and a fully specified JSON output schema enabling any modern rendering engine to display the adapted content
- Universal Design for Learning (UDL) principles embedded at every layer of the system
- A commitment to emotional safety, de-stigmatisation, and learner agency throughout the experience

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## The Problem: Education Has a Neurodivergence Gap

Hundreds of millions of learners worldwide are navigating educational systems designed for a neurological profile that does not reflect their own.

The neurodivergent population is not a niche minority. Dyslexia alone affects between 15 and 20 percent of the global population. ADHD affects approximately 8 percent of children and a significant proportion of adults. Autism Spectrum Disorder is diagnosed in 1 in 36 children in the United States. Developmental Coordination Disorder affects 5 to 6 percent of children, and dyscalculia affects approximately 7 percent. When these populations overlap, as they frequently do (since comorbidity is the statistical rule rather than the exception), the proportion of learners who encounter difficulty with standard educational formats is substantial.

Despite this scale, educational content design has remained largely static. Textbooks present dense paragraphs. Online courses offer video lectures followed by timed quizzes. Study materials assume fluent reading, accurate spelling, comfortable handwriting, and the executive function to manage complex multi-step tasks without structure. For neurodivergent learners, these assumptions are not merely inconvenient; they are disabling.

*"ADHD is largely defined by challenges in settings such as schools where behavioural expectations are often demanding of attention capacity and self-control."*

(Translational Psychiatry, 2024)

# The Costs of the Gap

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The consequences of this gap are well-documented. Students with ADHD who do not receive appropriate interventions face long-term educational outcomes that are modest at best. Dyslexic learners who are not identified and supported early face compounding literacy deficits that persist into adulthood. Individuals with dyscalculia report academic underachievement, low self-esteem, and significantly restricted career prospects in fields that rely on numerical competency. Those with DCD carry the psychosocial impact of years of being labelled clumsy or lazy into adulthood, with measurable increases in rates of anxiety and depression.

Critically, the gap is self-reinforcing. A learner who encounters difficulty with standard materials during early education may develop avoidance behaviours, disengagement, and shame, thereby creating a negative cycle that renders subsequent learning progressively more challenging. The longer this gap remains unaddressed, the more entrenched the associated barriers become.

## What standard platforms offer

- Read-aloud button on text
- Extended time on timed tests
- Larger font size option
- Closed captions on video
- Dark mode or colour themes

## What BrainPulse™ delivers

- Audio-first content rebuild for dyslexia
- Chunk-based batching with breaks for ADHD
- Predictable step structure for ASD
- Concrete-to-abstract sequencing for dyscalculia
- Zero typing requirements for dysgraphia
- Large-target, motor-optional UI for DCD
- Mastery gating and depth extensions for 2e

# The Technology Opportunity

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Until recently, personalising educational content at this level of specificity was not technically or economically feasible. It required specialised human tutors, occupational therapists, or educational psychologists, whose expertise is expensive and geographically constrained.

The convergence of large language models, evidence-based learning science, and modern web rendering has fundamentally altered this calculus. It is now feasible to encode decades of educational neuroscience research into a computational system capable of transforming any study material into an optimised learning experience within seconds, at a fraction of the cost of specialist human support, and at global scale.

BrainPulse™ constitutes that system.

## 02

## The Science: A Research-Grounded Foundation

BrainPulse™ is not founded on intuition or anecdote. Every design decision in the platform is traceable directly to peer-reviewed research. The following section summarises the evidence base underpinning each neurodivergence profile addressed by the platform.

### 2.1 ADHD: Attention-Deficit/Hyperactivity Disorder

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The evidence base for ADHD interventions in educational settings is among the most extensive in the field of learning science. A 2025 meta-analysis published in *Frontiers in Psychology* reviewed 26 school-based randomised controlled trials conducted between 1980 and 2024, finding that school-based interventions were effective for combined ADHD symptoms (effect size  $d = -0.28$ ), inattention ( $d = -0.33$ ), academic performance ( $d = 0.37$ ), and social skills ( $d = 0.28$ ).

Systematic reviews and meta-analyses published by the CDC, NIH/PMC, and Evans et al. (2018) in the *Journal of Clinical Child and Adolescent Psychology* identify several categories of proven intervention. Behavioural classroom management, encompassing the setting of clear goals, the provision of immediate positive feedback, and the use of token economy systems, is robustly supported across multiple decades of research. Academic coaching, which focuses on planning, organisation, and learning strategy rather than content tutoring, has been shown to produce a statistically significant increase in GPA of 0.04 points per hour of coaching. Self-monitoring skills, including daily progress sheets and accountability check-ins, reduce procrastination and improve follow-through. Spaced and paced studying, defined as distributing practice over time rather than concentrating it, is consistently favoured over massed or cramming approaches.

Computer-assisted instruction is specifically identified in the literature as a strategy that may provide the necessary conditions for supporting academic skills development in children with ADHD, as it allows lessons and goals to be tailored to each child's instructional level (PMC3233687). BrainPulse™ operationalises each of these evidence-based findings within its platform architecture.

## 2.2 Dyslexia

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The scientific consensus regarding effective dyslexia intervention is robust and well-established. Structured Literacy, as defined and advocated by the International Dyslexia Association, is the most effective approach for students who experience unusual difficulty learning to read and spell printed words. Evidence is strong that the majority of students learn to read better with structured teaching of basic language skills. This approach encompasses explicit, systematic, cumulative, and multisensory instruction; the Orton-Gillingham method and its derivatives represent the most widely validated implementations.

The National Reading Panel (2000) and the National Early Literacy Panel (2008) identified phonological awareness, phonics, vocabulary, fluency, and reading comprehension as the five essential components of evidence-based reading instruction. Research presented at the 2024 International Dyslexia Association Conference (Schechter et al.) demonstrated that explicit structured phonics integration across 17 schools enhanced overall reading skill development and student outcomes at scale.

Morphological awareness, defined as the ability to recognise and understand word parts such as prefixes, roots, and suffixes, has emerged in recent research as a significant additional component. A 2024 study published in *Child Neuropsychology* (Graziani et al.) examined training in rapid automatized naming in children with developmental dyslexia, confirming that morphological and phonological training together produce measurable gains.

The IDA further specifies that dyslexic learners benefit from: synchronised audio-visual presentation (text highlighted as audio plays), dyslexia-friendly typography, background colour options, and the complete elimination of time pressure from reading tasks.

## 2.3 Autism Spectrum Disorder

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The National Clearinghouse on Autism Evidence and Practice (NCAEP), in partnership with the National Professional Development Center on ASD, has conducted the most comprehensive systematic review of autism intervention research to date. Their third-generation review (Hume et al., *Journal of Autism and Developmental Disorders*, 2021) synthesised 972 studies and identified 28 evidence-based practices that meet the criteria for positive outcomes for autistic learners.

Among the most relevant for educational platform design are: Discrete Trial Training (DTT), which breaks skills into small, discrete steps with a clear beginning, middle, and end; Pivotal Response Training (PRT), which uses naturalistic, motivation-based learning; video modelling, which uses assistive technology to demonstrate procedures step-by-step; and cognitive-behavioural interventions. Predictable routines and visual supports are explicitly supported as reducing anxiety and establishing psychological safety. The practice of incorporating learners' special interests, by embedding learning into personally relevant contexts, has been shown to significantly increase engagement and academic performance.

A 2024 study published in *Educational Research: Theory and Practice* (Lee, Gallup, Perihan, and Fan) further validated the effectiveness of peer-mediated instruction for ASD learners in school settings, and noted that the 28 NCAEP evidence-based practices, when implemented with fidelity, help autistic students live fuller lives and integrate into society more effectively.

## 2.4 Dyscalculia

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Approximately 7 percent of the population exhibits difficulties in processing numerical information and performing arithmetic, a condition termed Developmental Dyscalculia, which significantly affects educational and professional outcomes and often persists into adulthood (PubMed, 2014). A large-scale study by Nurrahma et al. (2024), testing a targeted intervention model on 1,247 students, identified 9.7 percent of the sample as dyscalculic and demonstrated that planned interventions significantly reduced challenges, particularly for recognising and ordering numbers.

The research literature strongly supports multi-component interventions that simultaneously target the multiple deficit systems underlying dyscalculia: the approximate number system, arithmetic fact retrieval, and working memory. Multisensory instruction engaging visual, auditory, kinesthetic, and tactile pathways is particularly effective. The Number Race (Wilson and Dehaene), Calcularis 2.0 (von Aster and Kucian), and similar evidence-based programmes demonstrate consistent gains in magnitude comparison and number line estimation.

A 2025 pilot study published in MDPI Computers (Papadakis et al.) examined educational robotics and game-based interventions for dyscalculia and found a 75 percent increase in numerical skills and an 85 percent improvement in motivation compared to traditional drill approaches. A separate 2025 PMC study (PMC12109858) tested an adaptive AI-powered platform using Dynamic Bayesian Networks on 158 children aged 6 to 10 and demonstrated significant improvements in numerical abilities through personalised, gamified learning pathways.

## 2.5 Dysgraphia

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A 2025 systematic review published in MDPI Children (PMC12110418), examining 12 key studies published between 2004 and 2024, classified dysgraphia interventions into four evidence-based categories: task-oriented and sensorimotor-based interventions; technology-assisted solutions; self-regulated and individualised approaches; and integrated methodologies. The review explicitly noted that dysgraphia is heterogeneous and must be tailored to the child's co-occurring profile; DCD presentations require different approaches than ADHD presentations, which differ again from dyslexia presentations.

A 2024 study in the Journal of Learning Disabilities (Jolly, Jover, and Danna) analysed handwriting in 68 French children across DCD, reading disorder, and comorbid profiles, finding distinct motor impairment subtypes that advocated for fine-grained analysis of the writing process rather than uniform intervention.

## 2.6 DCD / Dyspraxia

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A 2024 Frontiers in Neurology review (10.3389/fneur.2024.1359955) provides a comprehensive overview of DCD assessment and intervention within the International Classification of Functioning, Disability, and Health: Children and Youth (ICF-CY) framework. DCD affects 5 to 6 percent of children and, critically, persists into adulthood in 30 to 70 percent of those diagnosed as children. The review documents that DCD is frequently associated with ADHD, ASD, dyslexia, and developmental language disorders, and that limited mobility from motor skill deficits leads to decreased social participation and increased risk of anxiety and depression.

The evidence base for DCD intervention emphasises task-oriented approaches, occupational therapy integration, interprofessional collaboration, and early diagnosis. For online learning platforms specifically, the research identifies interface accessibility as the primary intervention, emphasising the removal of motor barriers through large interaction targets, full keyboard navigation, voice control support, and single-step interactions.

## 2.7 Twice-Exceptional Learners

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A 2024 paper published in the Journal of Clinical Psychology and Mental Health (Koifman) synthesises the literature on twice-exceptional students, defined as those who are intellectually gifted and simultaneously possess one or more learning differences,. The central challenge for 2e learners is the cancellation effect: giftedness and disability can cancel each other out, producing deceptive average performance that fails to flag either the exceptional potential or the genuine need. The Davidson Institute (2022) identifies executive function deficits masked by verbal ability as a particularly common pattern in 2e learners with ADHD or ASD co-occurrence.

The evidence supports dual differentiation, comprising simultaneous enrichment and remediation, as the only adequate response to a 2e profile. Standard platforms fail these learners in both directions simultaneously: too slow and too simple for the gifted dimension, and too text-heavy and writing-dependent for the learning disability dimension.

## 03

## The BrainPulse™ Platform

BrainPulse™ is a full-stack adaptive learning platform. Its architecture has three integrated layers: an AI transformation pipeline, a neurodivergence profile engine, and a structured content rendering system.

### 3.1 How It Works: The User Journey

## 01

**Upload**

Learner uploads any study material (PDF, DOCX, lecture transcript, course notes, or textbook chapter)

## 02

**Profile**

Learner selects their neurodivergence profile, or completes an onboarding questionnaire for automatic configuration

## 03

**Transform**

BrainPulse™ AI analyses the content and restructures it into a typed content array according to the profile's guidelines

## 04

**Render**

The adapted content is rendered as an interactive, multimodal learning session in the platform

## 05

**Learn**

Learner progresses through the experience with spaced repetition, real-time feedback, and session analytics

## 3.2 The AI Transformation Pipeline

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The transformation pipeline constitutes the core intellectual property of CohenHallowell and the principal engine underlying the BrainPulse™ trademark. When a learner uploads a study material, the system executes a multi-stage AI process.

**Stage 1: Content Analysis.** The AI reads the uploaded material and extracts key concepts, vocabulary, procedural steps, factual claims, and structural relationships. It builds an internal knowledge graph of the material.

**Stage 2: Profile Mapping.** The system consults the selected neurodivergence profile's guideline set, a structured JSON reference that encodes all evidence-based design rules for that profile, and determines which content node types to use, in what sequence, and with what configuration.

**Stage 3: Content Generation.** The AI generates the adapted content: rewrites dense paragraphs as 40–60 word card bodies; breaks vocabulary into syllabified, phonetic entries with morphological decomposition; creates numbered step procedures from implicit sequences; identifies opportunities for audio narration, image anchors, and interactive elements.

**Stage 4: Schema Validation.** The output is validated against the BrainPulse™ content schema before delivery, ensuring every required field is present, every node type is correctly structured, and the sequence respects the profile's ordering rules (e.g., session bookends for ASD, mastery checks before modules for 2e).

**Stage 5: Rendering.** The validated content array is passed to the frontend renderer, which interprets each node type and displays the appropriate interface component: a card, audio player, video, manipulative widget, quiz, break timer, or graphic organiser.

### Design philosophy

The transformation is not a cosmetic reformatting. The AI must genuinely reconstruct the pedagogical architecture of the material, including what content is presented first, how it is sequenced, which modality carries each concept, and how mastery is assessed, based on the cognitive profile of the learner.

### 3.3 The Neurodivergence Profile Engine

BrainPulse™ supports seven neurodivergence profiles at launch. Each profile is a structured object containing: a design principle (the core philosophy in one paragraph), a set of learning guidelines (numbered, actionable rules derived from the research), and a content type map (which of the 16 node types the profile uses and in what priority order).



Each profile is independent but composable. For learners with comorbid profiles, who represent a significant proportion of the neurodivergent population, the system merges guidelines from all relevant profiles, resolving conflicts in favour of the most accessible option. For example, a learner with both ADHD and dyslexia receives content that is simultaneously chunked (ADHD), audio-first (dyslexia), and free of time pressure (both).

## 3.4 The Content Node Architecture

The BrainPulse™ content layer is built around 16 typed content nodes, grouped into eight categories. This architecture enables any compliant rendering engine to display adapted content without custom logic per neurodivergence; profile selection occurs upstream in the transformation pipeline, and the renderer simply interprets the node types it receives.

Category	Node Types	Function
<b>Core</b>	card, audio_clip, video, quiz	Universal building blocks present in every profile's output
<b>Literacy</b>	vocabulary_card	Syllabified, phonetic, audio-rich word study for dyslexia
<b>Procedural</b>	worked_example	Numbered step-by-step sequences for ASD and dyscalculia
<b>Math</b>	manipulative	Interactive number lines, counters, and fraction tiles
<b>Pacing</b>	break_prompt, progress_marker	Rhythm, fatigue management, and gamification milestones
<b>Structure</b>	transition_screen, session_bookend	Predictability scaffolding and anxiety reduction for ASD
<b>Expression</b>	graphic_organizer, fill_in_blank	Writing-free knowledge output for dysgraphia and ADHD
<b>Advanced</b>	mastery_check, deep_dive, reflection_prompt	Acceleration, extension, and metacognition for 2e learners

## 3.5 Universal Design Principles

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Regardless of profile, every BrainPulse™ experience is built on six universal design principles derived from the research literature and encoded as non-negotiable constraints in the transformation pipeline.

- Universal Design for Learning (UDL): multiple means of representation, expression, and engagement, such that no single modality constitutes the only path to mastery
- Learner control and personalisation: Font, background colour, audio speed, session length, notification frequency, and response modality are all configurable
- Profile onboarding: An optional questionnaire identifies the learner's profile and automatically pre-configures all relevant settings
- Spaced repetition as default architecture: Content is scheduled for distributed review using a spaced repetition (SR) algorithm rather than being presented once and abandoned
- No time pressure by default: All interactions are untimed. Time pressure disadvantages every neurodivergent profile studied in the literature
- Emotional safety and de-stigmatisation: Platform language, imagery, and feedback actively normalise neurodivergence and celebrate different learning paths

## 04

## Differentiation: What Makes BrainPulse™ Novel

The adaptive learning market is not novel. What distinguishes the current approach is its grounding in neuroscience, the construction of a content architecture built around that science, and the use of artificial intelligence to execute the transformation at scale.

### 4.1 Content Transformation vs. Content Accommodation

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The dominant paradigm in accessible EdTech is accommodation, characterised by the provision of add-on features that help a learner with a disability access content that was not originally designed for them. Screen readers, extended time, caption files, and colour contrast toggles are accommodations. They reduce the friction of accessing a standard experience.

BrainPulse™ represents a categorically distinct approach. It does not accommodate a standard experience. It replaces the standard experience with one that is purpose-built for the learner's brain. A dyslexic learner does not receive a text article with a read-aloud button. They receive a series of 75-second audio clips paired with images, vocabulary breakdowns with syllabification and morphology, and comprehension checks that accept spoken responses. The content itself has been restructured.

### 4.2 Evidence-Based Design at Every Layer

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Many EdTech platforms purport to be research-backed. BrainPulse™ is designed so that every content design decision, including the maximum word count on a card, the presence of a transition screen before section changes, and the requirement for a concrete anchor before abstract symbols, traces to a specific, citable research finding. The platform's design specification is a living research document, not a set of design preferences.

This evidential grounding serves two purposes. Commercially, the platform's research-grounded guidelines constitute its strongest defensible competitive advantage, as they cannot be replicated without replicating the underlying research synthesis. Ethically, it ensures that the platform does not harm learners by implementing unvalidated or neuromyth-based approaches, which the Frontiers in Education 2025 review specifically identified as a significant problem in current educational support for dyscalculia and dyslexia.

## 4.3 Profile Specificity and Comorbidity Awareness

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Most adaptive learning platforms that address neurodivergence do so for a single condition, typically dyslexia or ADHD in isolation. BrainPulse™ supports seven profiles at launch and is designed from the outset to handle comorbidity. The profile engine merges guideline sets; the content schema supports simultaneous multi-profile adaptation; the onboarding flow is designed to surface complex presentations, not just single-diagnosis profiles.

This matters because comorbidity rates are high. ADHD and dyscalculia co-occur in 20 to 60 percent of cases. DCD frequently co-occurs with ADHD, ASD, and dyslexia. Twice-exceptional learners by definition have a co-occurring gift and disability. A platform that only handles single profiles addresses, at best, a fraction of the actual neurodivergent population.

## 4.4 The Proprietary BrainPulse™ Algorithm

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The BrainPulse™ algorithm encodes the complete neurodivergence learning framework, including the profile guideline sets, content transformation rules, node type specifications, and schema validation logic, into a structured AI instruction system. The algorithm governs: how source material is segmented and prioritised; which node types are selected for each concept; how transitions, bookends, and pacing elements are inserted; how vocabulary is identified and decomposed; how assessments are structured per profile; and how the output is validated for compliance.

This algorithm is the product of the research synthesis, the design framework, and the content architecture developed and documented by CohenHallowell and represents a key differentiator of the platform. It is trademarked as BrainPulse™ and represents the proprietary core of the CohenHallowell platform.

## 05

## Market Opportunity

The intersection of the global neurodivergent population, the growing EdTech market, and increasing institutional demand for evidence-based inclusive education creates a substantial and currently underserved market opportunity.

1.3B+

people worldwide  
are neurodivergent

77M

students diagnosed  
with ADHD globally

\$404B

global EdTech  
market size (2025)

42+

US states with  
dyslexia-specific  
education laws

## 5.1 The Learner Market

Neurodivergent individuals represent a significant and cross-demographic market. They include students at every level from primary school through post-secondary education, adult learners pursuing professional development, certification, and career transitions, and parents seeking support for their children. They include some of the most motivated learners in the world: individuals who have spent years seeking to access knowledge through systems not designed for them, and who demonstrate exceptional engagement when provided with tools appropriately designed for their cognitive profiles.

The addressable market is not age-restricted. DCD persists into adulthood in 30 to 70 percent of those diagnosed as children. Dyslexia affects adults at the same rate as children. ADHD is increasingly diagnosed and recognised in adults who were missed in childhood. The platform's design for all ages is not merely an aspiration; it is a product requirement.

## 5.2 The Institutional Market

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Beyond individual learners, BrainPulse™ addresses a substantial institutional market. Universities and colleges are under increasing legal and regulatory pressure to provide accessible learning environments for students with disabilities. K-12 schools operate under IDEA and Section 504 frameworks in the United States, and equivalent legislation across Canada, the United Kingdom, and the European Union, requiring evidence-based accommodations for neurodivergent students. Employers with large training and development programmes face the same obligations for neurodivergent employees.

BrainPulse™ may be positioned as an institutional licensing product: a platform that transforms an institution's existing course catalogue into an adapted, neurodivergence-ready format without requiring manual redesign of every course. This is a qualitatively different value proposition than hiring specialist tutors or building custom accessible versions of every module.

## 5.3 The Regulatory Tailwind

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Legislative momentum in this domain is accelerating. As of 2025, over 42 US states have enacted dyslexia-specific education laws mandating evidence-based reading instruction and screening. Federal funding through IDEA and its state equivalents creates dedicated budget lines for learning disability support. The 2025 Frontiers in Education review notes that nations are increasingly adopting neurodiversity-based educational models and that the direction of policy travel is firmly toward evidence-based, inclusive, and personalised approaches.

BrainPulse™ is positioned to become the platform of record for institutions seeking to demonstrate regulatory compliance with accessible, evidence-based educational provision.

## 06

## The Learning Experience by Profile

The following overview illustrates how BrainPulse™ transforms identical source material differently for each profile, demonstrating that the adaptation process constitutes genuine pedagogical reconstruction rather than superficial reformatting.

Consider a scenario in which a learner uploads a chapter on photosynthesis from a standard biology textbook. The source material comprises 1,200 words of dense prose with three diagrams and a 10-question timed multiple-choice assessment at the end. The following describes what BrainPulse™ delivers for each profile.



### ADHD

Content is divided into 6 micro-batches of 5 cards each. Every card carries a maximum of 60 words, a visual, and an audio narration. After each batch, a quiz of 2 questions provides immediate, specific feedback, followed by a progress marker (batch complete, 10 points awarded) and a 2-minute break prompt with a physical activity suggestion. A persistent progress bar shows session completion. Push notification is scheduled for 24 hours later to trigger the first spaced repetition review.



### Dyslexia

Content is divided into 6 micro-batches of 5 cards each. Every card carries a maximum of 60 words, a visual, and an audio narration. After each batch, a quiz of 2 questions provides immediate, specific feedback, followed by a progress marker (batch complete, 10 points awarded) and a 2-minute break prompt with a physical activity suggestion. A persistent progress bar shows session completion. Push notification is scheduled for 24 hours later to trigger the first spaced repetition review.



## ASD

Session opens with a bookend screen: Today you will cover three topics: (1) what photosynthesis is, (2) the four steps, (3) a short quiz. Content proceeds through the three topics with explicit transition screens between each: You have finished Topic 1. Next: Topic 2, The Four Steps. The textbook's implicit narrative is replaced by a worked example with four numbered steps, each with a visual and a rationale sentence. The quiz uses single-answer MCQ only. Session closes with a matching bookend: You completed: (1) what photosynthesis is, (2) the four steps, (3) the quiz. Well done.



## Dyscalculia

Any numerical content in the material, including concentrations, ratios, and measurements, is preceded by a concrete anchor (a manipulative widget, a number line, or a visual quantity illustration) before any symbol is introduced. Worked examples break each calculation or comparison into individually numbered steps with rationale sentences. All practice is game-based with no time limit. Verbal narration accompanies every numerical concept.



## Dysgraphia

All assessment is replaced by non-writing formats. The 10-question test becomes a set of audio clips followed by MCQ and voice response options. The chapter summary becomes a pre-built graphic organiser flowchart (learner views the completed structure). Where reflection is valuable, a fill-in-blank template with voice input replaces open-ended writing. Speech-to-text is available on all text fields. No typing is ever required.



## DCD / Dyspraxia

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All interaction targets are enlarged to minimum 48x48px with generous spacing. Navigation is single-step and linear, with no complex multi-level menus. A video model of the process is provided alongside the card content, demonstrating photosynthesis visually without requiring the learner to read. All quiz interactions use large-button MCQ or voice response. A fatigue break is triggered after 20 minutes of activity. Voice command navigation is available throughout.



## Twice-Exceptional (2e)

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Session opens with a 3-question mastery check. If the learner scores 85 percent or above, they skip the foundational module and proceed directly to an advanced module covering the light-dependent reactions and Calvin cycle in biochemical detail. Card content is written at an elevated conceptual level. A deep-dive extension on RuBisCO and photorespiration is available as an optional node. All accessibility scaffolding from the co-occurring disability profile (e.g., dyslexia audio-first design) is applied simultaneously. Session closes with a metacognitive reflection prompt: What learning strategy helped you most today?

## 07

## Roadmap and Availability

BrainPulse™ launches in Q2–Q3 2026. The following milestones define the initial release and the platform's development trajectory.

### 7.1 Q2 2026: Platform Launch

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- Full seven-profile neurodivergence adaptation engine
- 16 content node types with complete rendering support
- Upload support for PDF, DOCX, TXT, and plain-text formats
- Audio narration generation for all card and audio clip nodes
- Spaced repetition engine with configurable review scheduling
- Session analytics dashboard: time on task, accuracy by node type, and streak tracking
- Web application with full responsive design for desktop and tablet
- Institutional API for batch content transformation

### 7.2 Q3 2026: Extended Capabilities

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- Mobile application for iOS and Android
- Video content upload and automatic transcription with captions
- Comorbid profile support: automatic multi-profile merging via onboarding questionnaire
- Manipulative widget library for dyscalculia: number lines, counters, and base-ten blocks
- Voice response assessment with speech recognition
- Educator and institutional dashboard with class-level analytics
- LMS integration: Canvas, Moodle, and Blackboard

## 7.3 2027 and Beyond

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- Continuous learning engine: platform adapts based on individual learner performance data over time
- Additional neurodivergence profiles including Tourette syndrome, sensory processing disorder, and acquired brain injury
- Research partnership programme with university learning science departments
- Multilingual support beginning with French, Spanish, and Mandarin
- BrainPulse™ Certified Content Programme for institutional partners

### Partnership opportunities

Early access partnerships for educational institutions and corporate L&D teams are available from Q1 2026.

Contact CohenHallowell at [cohenhallowell.com](https://cohenhallowell.com) to discuss institutional licensing, pilot programmes, and API access.

## 08

## About CohenHallowell

CohenHallowell is an adaptive learning technology company dedicated to making evidence-based, personalised education accessible to every learner, regardless of how their brain works. The founding conviction of the organisation is straightforward: the problem does not reside with the learner; it resides in the instructional format.

BrainPulse™ is CohenHallowell's flagship platform, representing the culmination of a rigorous research synthesis programme, a sophisticated content architecture, and a commitment to grounding every product decision in the best available science. CohenHallowell does not offer neurodivergent learners a marginally more accessible version of a standard experience. The platform offers a learning experience built specifically for them, from the ground up, by a system designed to reflect how their brain processes the world.

BrainPulse™ is not a niche product for a small population. It represents the future of education, insofar as personalised, evidence-based, multimodal learning is demonstrably beneficial for every learner, and those who need it most deserve access to it first.

Website

cohenhallowell.com

Platform

BrainPulse™: Adaptive Learning Engine

Trademark

BrainPulse™ is a trademark of CohenHallowell

Launch

Q2–Q3 2026

Enquiries

cohenhallowell.com

## 09

## References

The following peer-reviewed studies, government reports, and institutional publications form the evidence base of the BrainPulse™ platform and this white paper.

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