



Recommendation Guide

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Lightkey Medical as a Composition Tool

Lightkey Medical UK is a specialist composition tool designed to support the process of writing itself, enabling students to construct accurate, structured, and fluent written work in disciplines requiring complex medical and scientific terminology.

It is particularly suited to students studying courses where specialist vocabulary, technical phrasing, and discipline-specific language form a core part of academic writing. This includes courses where subject areas and taught modules intersect with medical and medical sciences fields, such as:

- Psychology
- Health Promotion
- Social Care
- Biomedical Science
- Pharmacy
- Physiotherapy
- Health Sciences
- Podiatry
- Radiography
- Dentistry
- Health Care
- Public Health

Lightkey Medical supports not just spelling accuracy, but the composition of written language, including sentence construction, terminology selection, phrasing, and maintaining coherence in academic writing.

It is powered by an extensive lexicon comprising 27 specialist medical vocabularies, enabling real-time prediction of complex terminology, subject-specific phrases, and appropriate academic language structures.

This allows students to:

- Accurately form and structure sentences using technical language
- Reduce reliance on memory for specialist terminology
- Maintain writing flow without interruption
- Focus on meaning, analysis, and academic content



Lightkey Medical operates across applications (not limited to word processors), supporting writing in a wide range of academic contexts. Its adaptive functionality learns from the user over time, ensuring increasingly personalised and discipline-specific support, while all processing remains fully offline, ensuring privacy and compliance with academic integrity requirements.

Categorised as a composition tool within Student Loans Company (SLC)'s current product list, Lightkey supports the process of writing itself, rather than simply correcting spelling and grammar after text has been produced:

[\[https://www.practitioners.slc.co.uk/media/1457/product-list-software.xlsx\]](https://www.practitioners.slc.co.uk/media/1457/product-list-software.xlsx)

The term *composition* refers to “*the act of forming or putting together parts to create a whole, especially in writing*” (Oxford Languages). In an academic context, this includes the ability to generate ideas, structure sentences, organise thoughts, and express meaning clearly in written form.

For many disabled students, these aspects of composition, not just spelling accuracy, present the greatest barrier. Based on underlying symptoms, difficulties can include:

- Initiating writing or getting started
- Structuring sentences and maintaining coherence
- Sequencing ideas logically
- Word retrieval and forming appropriate phrasing
- Sustaining writing flow without interruption
- Managing the cognitive load of writing while simultaneously attending to spelling, grammar, and structure

Lightkey directly supports these core components of composition through its functionality. It provides predictive word and phrase suggestions in real time, supporting the construction of sentences as the student writes. It supports the process of composing written language, addressing key disability-related difficulties.



How Lightkey Medical Supports Composition

Lightkey Medical provides real-time, proactive writing support, enabling users to construct sentences as they write, particularly in disciplines requiring complex medical and scientific terminology. Its key features include:

- **Predictive text at word and phrase level:** supports sentence construction, idea generation, and accurate use of specialist medical vocabulary
- **Real-time suggestions:** reduces pauses and maintains writing flow, particularly when recalling complex terminology
- **Adaptive learning:** tailors suggestions to the individual's writing style, frequently used phrases, and **discipline-specific language**
- **Reduced keystrokes:** lowers both physical effort and cognitive demand, especially when producing longer or technical terms
- **Cross-application functionality:** supports writing across platforms, not just within a word processor

This means Lightkey Medical supports the formation of written language, including the accurate integration of specialist terminology, rather than simply identifying errors after the fact.

Standard tools such as Microsoft Word or Google Docs primarily provide retrospective support:

- Errors are identified *after writing has occurred*
- The user must already have generated the sentence and terminology
- Corrections rely on rule-based systems
- Limited support for idea generation, sentence construction, or technical vocabulary use

In contrast, Lightkey Medical:

- Supports writing in real time (during composition)
- Assists with word finding, phrasing, sentence development, and specialist terminology
- Learns from the user, becoming increasingly personalised and discipline-specific
- Reduces cognitive load, allowing focus on clinical reasoning, academic content, and meaning rather than mechanics

While there may be surface-level overlap in outcomes (e.g. improved written work), the functional difference between tools is significant, particularly where students are required to produce accurate, structured writing using complex subject-specific language.



Mind mapping tools support the planning stage of writing, helping students to organise ideas, generate content, and structure thoughts before writing begins. For many students, particularly those with difficulties in organisation or idea generation, this is an important and appropriate intervention. Mind mapping supports what a student wants to say; Lightkey Medical supports how they are able to write it, including how they accurately express subject-specific knowledge in written form.

However, planning alone does not address the challenges that arise during the act of writing itself, particularly where students must:

- Recall and apply complex medical terminology
- Construct grammatically accurate and coherent sentences
- Maintain writing flow while managing multiple cognitive demands

Across a range of disability types, students may experience difficulties at the point of composition, including:

- Specific Learning Difficulties (SpLD): difficulties with word retrieval, sequencing, spelling, and sentence structure
- Dyspraxia: difficulties with motor coordination, typing fluency, and written organisation
- ADHD: difficulties sustaining attention, maintaining writing flow, and initiating or completing written tasks
- Autism Spectrum Condition (ASC): difficulties with language formulation, structuring written expression, and translating ideas into written form
- Mental Health conditions: reduced motivation, cognitive fatigue, and difficulty initiating or sustaining writing
- Physical disabilities: reduced dexterity, pain, fatigue, and increased effort required for typing
- Vision loss/visual impairment: visual fatigue, tracking difficulties, and increased effort in reading and reviewing text
- Hearing loss: challenges with phonological processing, spelling, and written language structure
- Dyscalculia: difficulties with sequencing, working memory, and organising written information

Difficulties often occur not only in planning, but in converting planned ideas into coherent written text using accurate academic and technical language. Lightkey Medical operates at this critical stage of the process.

It supports composition in real time, assisting with sentence construction, word retrieval, terminology selection, and maintaining writing flow as ideas are translated into written language:

- Mind mapping tools support planning before writing begins
- Other tools support correction after writing occurs



- Lightkey Medical operates during writing itself, supporting the live construction of text and accurate use of specialist terminology
- Offline functionality ensures data privacy and reliability

This positions Lightkey Medical as a process-based composition intervention, rather than a planning or editing tool.

The presence of word suggestions within Lightkey Medical does not make it equivalent to a spelling and grammar tool; rather, these features form part of a wider system designed to:

- Reduce cognitive load
- Support language formulation
- Enable accurate use of discipline-specific vocabulary
- Maintain continuous written expression

For disabled students, this distinction is critical. Difficulties arise from the process of composing written language itself, including:

- Initiating writing
- Structuring sentences
- Retrieving appropriate vocabulary
- Applying specialist terminology
- Maintaining coherence and meaning

During the act of writing, multiple demands, cognitive, processing, linguistic, and physical, must be managed simultaneously. This is further compounded in medical and health-related disciplines, where accuracy of terminology is essential.

Standard tools do not address these challenges in real time, as they rely on the user already having produced text. Lightkey Medical, by contrast, provides proactive, in-the-moment support, enabling students to generate, structure, and accurately express writing as it is being produced.

Lightkey Medical reduces this burden at the point of composition, enabling:

- Continuous writing without disruption
- Reduced anxiety associated with errors and technical accuracy
- Improved fluency, coherence, and academic tone
- Accurate use of specialist medical and scientific terminology
- Greater independence in academic writing

Lightkey Medical addresses a distinct stage of the writing process and meets specific disability-related needs.

Its primary function is to support the generation, structuring, and expression of written language in real time, including the accurate use of complex



terminology, making it particularly appropriate for students who experience barriers in written composition within medical and health-related disciplines.

Why Lightkey Medical Provides Enhanced Support for Written Composition

Lightkey Medical supports the real-time construction of written language, rather than focusing solely on the correction of errors. This is particularly important in courses and modules that require the accurate use of specialist medical, health, and scientific terminology.

While standard tools such as Microsoft Word and Google Docs provide spelling and grammar checking, their functionality is primarily corrective and retrospective. These tools identify and suggest corrections only after text has already been written, requiring the user to independently generate spelling, phrasing, sentence structure, and specialist terminology before support is provided.

For many disabled students, this presents a significant barrier. Difficulties often arise during the process of composing written language, rather than solely in identifying errors after the fact. This challenge is further increased where students are required to write using complex, discipline-specific medical vocabulary, technical phrasing, and subject-specific language conventions. As a result, standard tools do not adequately address the underlying challenges associated with written expression in medical and health-related disciplines.

Lightkey Medical differs fundamentally in both function and purpose. It provides real-time, predictive support during composition, assisting students to construct sentences as they write and supporting the accurate integration of specialist terminology within the flow of writing. This enables:

- Reduced cognitive load: students are not required to simultaneously manage spelling, structure, terminology, and idea generation
- Improved writing fluency: fewer interruptions to correct errors or search for specialist vocabulary
- Enhanced word retrieval and phrasing: particularly beneficial where vocabulary access, sentence construction, or use of technical terminology is impaired
- Reduced physical effort: fewer keystrokes required, supporting those with motor difficulties and reducing fatigue when producing longer medical terms
- Sustained writing flow: minimising disruption caused by error correction and recall of complex subject-specific language

In contrast, standard tools:



- Require the student to produce text independently before support is available
- Provide rule-based corrections, which may be contextually inappropriate
- Do not meaningfully adapt to the individual's writing style or specialist academic discipline
- Do not reduce the real-time cognitive and physical demands of writing
- Do not proactively support the accurate production of medical and health-related terminology within continuous written composition

Lightkey Medical also provides context-aware, adaptive support, learning from the individual user over time and tailoring predictions to their writing patterns, subject-specific vocabulary, and academic discipline. This is particularly valuable where students are required to repeatedly use complex terminology in fields such as healthcare, biomedical science, pharmacy, physiotherapy, radiography, dentistry, psychology, public health, and related disciplines.

In this way, Lightkey Medical supports the development of coherent, structured, and technically accurate written expression, rather than simply correcting isolated errors after writing has occurred.

Difficulties helped by Lightkey Medical

Specific Learning Difficulty (SpLD)

Writing and Reviewing Academic work

Given the student's profile of Specific Learning Difficulty (SpLD), this can bring significant challenges in the process of written composition, particularly where difficulties with working memory, processing speed, sequencing, and word retrieval impact the ability to generate and express written language effectively. These may include:

- Reduced working memory capacity, impacting the ability to hold and manipulate information while writing
- Slower processing speed, affecting the ability to generate and organise written language efficiently
- Difficulties with word retrieval and sentence construction
- Reduced ability to sequence ideas and maintain coherence
- Difficulties with spelling, particularly where phonological processing is affected
- Increased cognitive load when managing multiple demands (content, structure, spelling, and typing simultaneously)

These challenges are further compounded in medical and health-related courses, where students are required to accurately recall, spell, and apply complex specialist medical and scientific terminology alongside structuring academic responses.

As a result, writing tasks can become fragmented, effortful, and time-consuming, with frequent disruptions to thought processes and reduced fluency.

Lightkey Medical is recommended as a specialist composition tool to support the student during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, while reducing the cognitive demands associated with spelling, phrasing, sequencing, and terminology recall.

Standard tools such as Microsoft Word or Google Docs primarily offer post-error correction, requiring the student to produce text independently before support is provided. This does not address the underlying compositional difficulties experienced during writing, particularly where

specialist vocabulary must also be generated accurately. While tools such as mind mapping software can support the planning stage of writing, helping students to organise ideas before writing begins, they do not address the challenges that arise during the act of composition itself, particularly where students experience difficulty translating ideas into structured written language.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with SpLD, these processes must often be managed simultaneously, placing significant demand on working memory and processing capacity.

Where specialist terminology is required, this increases complexity further, as students must accurately retrieve and apply technical vocabulary while maintaining structure and coherence.

Lightkey Medical supports this process by reducing the cognitive load associated with language formulation and terminology use, enabling more efficient and continuous written expression.

How Lightkey Medical Supports Composition

1. Reducing Cognitive Load and Supporting Working Memory

Lightkey Medical reduces the need to independently generate spelling, phrasing, and sentence structure simultaneously. By predicting words and phrases in real time, including specialist terminology, it supports the student in holding and developing ideas without losing track of meaning.

2. Supporting Writing Fluency and Processing Speed

Real-time predictive support reduces pauses associated with searching for vocabulary, recalling terminology, or correcting errors. This enables a more continuous writing process and helps to mitigate the impact of slower processing speed.

3. Supporting Word Retrieval and Terminology Use

Lightkey Medical provides contextually appropriate suggestions, supporting word finding and the accurate use of discipline-specific vocabulary. This is particularly beneficial where difficulties with phonological processing and recall affect the ability to independently generate complex terminology.

4. Supporting Sentence Construction and Sequencing

By offering multi-word and phrase-level predictions, Lightkey Medical supports the organisation and sequencing of ideas within sentences. This reduces fragmentation and supports clearer, more structured written expression.

5. Improving Coherence and Organisation at Sentence Level

Lightkey Medical supports the development of coherent written expression as it is being composed. By assisting with sentence structure and flow in real time, it enables the student to maintain continuity of thought, reducing the need to revisit and reorganise text after writing.

Lightkey Medical adapts to the individual over time, learning their writing style, commonly used vocabulary, and subject-specific language. This ensures that predictions become increasingly relevant and personalised, particularly where repeated use of specialist/technical terminology is required.

Its AI functionality is assistive rather than generative, meaning it supports the student's own writing without producing original content independently. All processing occurs locally on the device, ensuring data privacy and alignment with academic integrity requirements.

Additional benefits include:

- **Reduced cognitive load:** supports working memory and processing
- **Predictive support for specialist terminology:** reduces reliance on memory
- **Improved writing fluency:** supports continuous composition
- **Distraction-free interface:** supports focus
- **Specialist medical dictionaries:** support accurate academic and clinical language
- **Optional read-aloud functionality:** supports multi-sensory reinforcement
- **Integration with text-to-speech tools:** enhances accessibility
- **Offline functionality:** ensures data privacy and reliability

Where a student's primary difficulty lies in managing the multiple cognitive demands of written composition, including generating ideas, structuring sentences, sequencing information, and accurately applying specialist terminology, Lightkey Medical addresses these challenges by supporting the



real-time construction of written language, reducing cognitive load, and enabling accurate, fluent, and coherent written expression.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with SpLD, particularly within courses requiring complex medical and scientific language.

Dyspraxia

Writing and Reviewing Academic work

Given the student's profile of dyspraxia, this can bring significant challenges in the process of written composition, particularly where difficulties with motor coordination interact with cognitive demands.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with dyspraxia, the physical act of typing and the formulation of language occur simultaneously, placing significant demand on both motor and cognitive systems. Where specialist medical/subject related terminology is required, this adds an additional layer of complexity, as students must accurately recall, spell, and integrate technical vocabulary within structured written responses

Difficulties arising from dyspraxia can include:

- Reduced fine motor control, impacting typing accuracy and fluency
- Increased physical effort and fatigue during writing tasks
- Slower processing speed, affecting the ability to generate and organise written language efficiently
- Difficulties with sequencing ideas and structuring written output
- Challenges in sustaining writing flow, due to interruptions caused by errors or physical effort
- Increased cognitive load, particularly when managing both the physical act of typing and the formulation of language simultaneously

These challenges are further compounded in medical and health-related courses, where students are required to accurately produce complex specialist terminology, often alongside structuring detailed academic or clinical written responses. As a result, writing tasks can become slow, effortful, and fragmented, with frequent disruptions to both physical and cognitive processes.

Lightkey Medical supports this process by reducing both the mechanical demands of typing and the cognitive demands of language and terminology formulation, enabling more efficient and continuous written expression. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, while significantly reducing the physical and cognitive demands associated with typing and terminology recall.

Standard tools such as Microsoft Word or Google Docs primarily offer post-error correction, requiring the student to produce text independently before support is provided. This does not address the combined motor, cognitive, and compositional difficulties experienced during writing, particularly where specialist terminology must also be generated accurately. While tools such as mind mapping software can support the planning stage of writing, helping students to organise ideas before writing begins, they do not address the challenges that arise during the act of composition itself, particularly where students experience difficulty translating ideas into structured written language.

How Lightkey Medical Supports Composition

1. Reducing Cognitive and Physical Load

Lightkey Medical reduces the need for continuous manual input by predicting words and phrases after only a few keystrokes, including complex medical terminology. This lowers the physical effort required for typing while reducing the cognitive demand associated with generating spelling, phrasing, structure, and specialist vocabulary simultaneously.

2. Supporting Writing Fluency and Processing Speed

Real-time predictive support reduces the need to stop and correct errors or retype complex terms, enabling a more continuous writing process. This supports fluency and helps to mitigate the impact of slower processing speed and physical interruptions.

3. Supporting Attention and Task Persistence

By reducing the need for repeated corrections and minimising disruptions caused by typing effort and terminology recall, Lightkey Medical supports sustained engagement in writing tasks. This is particularly beneficial where effortful typing contributes to reduced concentration and task fatigue.

4. Supporting Sentence Construction, Sequencing, and Terminology

UseLightkey Medical provides contextually appropriate suggestions, supporting the formulation and sequencing of sentences in real time, alongside the accurate use of discipline-specific vocabulary. This helps the student to organise ideas more effectively while reducing fragmentation caused by interruptions in typing or recall.

5. Improving Coherence and Organisation at Sentence Level

Lightkey Medical supports the development of coherent written expression as

it is being composed. By assisting with sentence structure, flow, and terminology integration in real time, it enables the student to maintain continuity of thought, reducing the need to revisit and reorganise text, which can be both physically and cognitively demanding.

Adaptive Support for Motor Difficulties:

Lightkey Medical includes adaptive functionality designed to account for differences in typing ability. Its predictive system processes keystrokes in real time and adjusts the level of support provided, balancing prediction accuracy with coverage.

Where typing is more effortful, Lightkey Medical can provide broader predictive support, increasing text coverage and reducing the number of keystrokes required. This is particularly beneficial when producing longer or more complex medical terms.

By reducing both physical strain and cognitive effort, this adaptive approach supports a more accessible and efficient writing experience.

Additional Accessibility Benefits

- **Reduced keystrokes:** minimises physical strain and fatigue
- **Predictive support for specialist terminology:** reduces reliance on memory for complex vocabulary
- **Distraction-free interface:** supports focus during effortful tasks
- **Specialist medical dictionaries:** support accurate academic and clinical language
- **Customisable visual settings:** improve readability
- **Optional read-aloud functionality:** supports multi-sensory reinforcement
- **Integration with text-to-speech tools:** enhances accessibility
- **Offline functionality:** ensures data privacy and reliability

The application's specialist correction minimises typing errors, supporting coordination difficulties. Colour-coded themes can reduce visual confusion, and keyboard shortcuts streamline the writing process, further reducing effort.

Where a student's primary difficulty lies in managing the combined motor, cognitive, and compositional demands of writing, particularly where accurate use of specialist terminology is required, Lightkey Medical addresses these challenges by supporting the real-time construction of written language,



reducing physical effort, supporting sentence structure, and enabling accurate integration of technical vocabulary.

With Lightkey, the need for precise keyboard movements is also reduced, aided by intelligent word prediction. Lightkey auto-completes words in real time, helping avoid constant backspacing or mouse use to correct errors. Standard word processors highlight errors after the fact, which can lead to frustrating stops and edits mid-flow. The use of Lightkey therefore supports smoother writing for students who have difficulty maintaining momentum or switching between writing and correcting, where there are sequencing difficulties.

The application's specialist correction minimises typing errors, aiding coordination challenges. Colour-coded themes add clarity and can reduce visual confusion where there are coordination difficulties.

Keyboard shortcuts streamline writing processes. The use of Lightkey can therefore also reduce fatigue as there is no need for prolonged handwriting or typing.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with dyspraxia undertaking courses requiring complex medical and scientific language.

ADHD

Writing and Reviewing Academic work

Given the student's profile of ADHD, there are likely to be significant challenges associated with the process of written composition, particularly where difficulties with attention, concentration, and executive functioning impact the ability to sustain and organise written work. These may include:

- Difficulties with sustaining attention and maintaining focus during writing tasks
- Reduced ability to initiate and maintain writing momentum
- Challenges with working memory, affecting the ability to hold and develop ideas while writing
- Difficulties with organising and sequencing thoughts into coherent written language
- Increased susceptibility to distraction and interruption
- Increased cognitive fatigue, particularly when managing multiple demands simultaneously (content, structure, spelling, typing, and terminology)

These challenges are further compounded in medical and health-related courses, where students are required to accurately recall and apply complex specialist medical and scientific terminology alongside structuring written responses.

As a result, writing tasks may become inconsistent, fragmented, and difficult to sustain, with frequent loss of focus and disruption to the flow of ideas.

Lightkey Medical as a specialist composition tool is designed to support an individual during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, while supporting continuity of thought and reducing interruptions associated with attention difficulties and terminology recall.

Standard tools such as Microsoft Word or Google Docs primarily provide post-error correction, requiring the student to independently generate text before support is provided. This can interrupt attention, increase cognitive load, and disrupt writing flow, particularly for students with ADHD, and does not support the accurate use of specialist vocabulary during composition. While tools such as mind mapping software can support the planning stage of writing, helping students to organise ideas before writing begins, they do not

address the challenges that arise during the act of composition itself, particularly where students experience difficulty translating ideas into structured written language.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with ADHD, the primary difficulty often lies not only in accuracy, but in sustaining the cognitive processes required to produce and maintain written expression over time.

Where specialist terminology is required, this further increases cognitive demand, as students must recall, apply, and integrate technical vocabulary while maintaining attention and structure.

Lightkey Medical supports this process by reducing the cognitive effort required during writing, enabling more continuous, supported, and manageable composition.

How Lightkey Medical Supports Composition

1. Supporting Attention and Sustained Focus

Maintaining attention is key for individuals with ADHD. Lightkey Medical supports the student to remain in the writing “zone” by reducing the need to pause and correct errors or search for specialist terminology. By minimising interruptions and supporting writing in real time, it helps sustain focus and engagement throughout the task.

2. Supporting Initiation and Writing Momentum

Students with ADHD may experience difficulty getting started or sustaining effort once writing begins. Lightkey Medical’s predictive suggestions act as prompts, supporting idea generation and helping the student initiate writing. These prompts also support continued writing momentum, reducing disengagement and supporting task completion.

3. Reducing Cognitive Load and Supporting Working Memory

Lightkey Medical reduces the need to manage spelling, phrasing, sentence construction, and terminology recall simultaneously. This enables the student to hold and develop ideas more effectively without losing track of meaning.

4. Supporting Writing Fluency and Processing Efficiency

Real-time word and phrase prediction reduces pauses associated with searching for vocabulary, recalling complex terminology, or correcting errors. This supports a more continuous writing process and reduces cognitive fatigue.

5. Supporting Sentence Construction, Organisation, and Terminology Use
Lightkey Medical provides contextually appropriate suggestions, supporting the formulation of sentences and the accurate use of discipline-specific vocabulary in real time. This helps the student organise thoughts more effectively and reduces fragmentation in written output.

6. Improving Coherence and Continuity

By supporting the construction of sentences as they are written, Lightkey Medical enables the student to maintain a clear line of thought, reducing the likelihood of losing ideas or producing disjointed writing, particularly where attention fluctuates.

Lightkey Medical learns from the individual user over time, adapting to their writing style, vocabulary, and subject-specific language. This personalised support promotes greater consistency and reduces the cognitive effort required to produce academic writing, particularly where repeated use of course-related/technical terminology is required.

Its AI functionality is assistive rather than generative, meaning it supports the student's own writing without producing original content independently. All processing occurs locally on the device, ensuring data privacy and alignment with academic integrity requirements.

Additional benefits include:

- **Distraction-reduced interface:** supports focus and attention
- **Reduced keystrokes:** lowers effort and supports sustained engagement
- **Predictive support for specialist terminology:** reduces reliance on memory
- **Optional read-aloud functionality:** supports multi-sensory reinforcement
- **Integration with text-to-speech tools:** enhances accessibility
- **Specialist medical dictionaries:** support accurate academic and clinical language
- **Offline functionality:** ensures data privacy and reliability

Where a student's primary difficulty lies in sustaining attention and managing the cognitive demands of written composition over time, particularly where accurate use of specialist terminology is required, Lightkey Medical addresses these challenges by supporting the real-time construction of written language, reducing interruptions, supporting attention, and enabling more consistent,



fluent, and structured writing.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with ADHD undertaking courses requiring complex medical and scientific language.

Autism Spectrum Condition (ASC)

Writing and Reviewing Academic work

Given the student's profile of Autism Spectrum Condition (ASC), this can bring significant challenges associated with the process of written composition, particularly where differences in language processing, organisation, initiation, and sensory regulation impact written expression. These may include:

- Difficulties with initiating and starting written work, particularly when faced with a blank page
- Challenges in translating ideas into coherent written language
- Differences in language processing, affecting sentence construction and expression
- Difficulties with sequencing and organising ideas logically
- Increased anxiety related to writing, including concerns about making errors or producing work to the required standard
- Sensory and attentional differences, impacting focus and tolerance for writing tasks

These challenges are further compounded in medical and health-related courses, where students are required to accurately use complex specialist medical and scientific terminology, alongside structuring clear and academically appropriate written responses.

As a result, writing may feel overwhelming, effortful, or difficult to begin and sustain, with potential impacts on confidence and academic performance.

Lightkey Medical, as a specialist composition tool, supports during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, while supporting clarity, structure, continuity, and the accurate use of specialist terminology.

Standard tools such as Microsoft Word or Google Docs primarily provide post-error correction, requiring the student to independently generate text before support is provided. This can increase cognitive demand and contribute to anxiety, particularly where there are difficulties initiating writing, structuring language, or recalling terminology. While tools such as mind mapping software can support the planning stage of writing, helping students to organise ideas before writing begins, they do not address the challenges that arise during the act of composition itself, particularly where students

experience difficulty translating ideas into structured written language.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with ASC, difficulties often arise not in understanding concepts, but in translating ideas into linear, structured written language.

Where specialist terminology is required, this adds further complexity, as students must accurately select and integrate technical vocabulary while maintaining structure and coherence.

Lightkey Medical supports this process by providing structured, predictable, and context-aware support during writing, enabling more accessible and manageable composition.

How Lightkey Medical Supports Composition

1. Reducing Anxiety and Supporting Confidence in Writing

Students with ASC may experience heightened anxiety around writing tasks, particularly where there is concern about making mistakes or producing incorrect work. Lightkey Medical reduces the likelihood of visible errors by supporting writing in real time, including accurate use of specialist terminology, helping to create a calmer and more supportive writing experience.

2. Supporting Initiation and Getting Started

Students with ASC may find it difficult to begin writing tasks. Lightkey Medical provides predictive word and phrase suggestions that act as scaffolding, helping the student to initiate writing and move beyond the barrier of a blank page. These prompts also support ongoing engagement.

3. Supporting Expression of Ideas and Language Processing

Context-aware predictions support the formulation of sentences as they are written, aiding language processing and reducing the effort required to construct appropriate phrasing. This is particularly beneficial where translating ideas into written language is challenging.

4. Supporting Sentence Construction, Sequencing, and Terminology

UseLightkey Medical provides structured suggestions that support the organisation and sequencing of ideas within sentences, alongside the

accurate use of discipline-specific vocabulary. This reduces the cognitive effort required to structure writing and supports clearer expression.

5. Improving Coherence and Organisation

By supporting sentence construction in real time, Lightkey Medical helps the student maintain logical flow and continuity of ideas. This reduces the need to revisit and reorganise text after writing, which can be cognitively demanding and disruptive.

6. Supporting Focus and Reducing Sensory Overload

Lightkey Medical's clean, distraction-reduced interface supports concentration and reduces sensory overwhelm, enabling the student to engage more effectively with writing tasks.

7. Providing Predictability and Personalisation

Lightkey Medical learns from the individual user over time, adapting to their writing style, vocabulary, and subject-specific language. This creates a more predictable and consistent writing experience, which can be particularly beneficial for students who prefer routine and structure.

Where a student's primary difficulty lies in initiating, structuring, and expressing ideas in written form, alongside managing anxiety and cognitive demands during composition, particularly where the accurate use of specialist terminology is required, while planning tools may support idea generation and organisation prior to writing, they do not address the challenges experienced during composition itself. Lightkey Medical addresses these challenges by supporting the real-time construction of written language, providing structured, predictable, and adaptive support throughout the writing process.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with ASC undertaking courses. Its use enables students to focus on clinical reasoning and academic content, rather than recalling terminology

Mental Health Difficulties

Writing and Reviewing Academic work

Difficulties arising from a mental health condition can bring significant challenges with the process of written composition, particularly where difficulties with motivation, anxiety, and executive functioning impact the ability to initiate, sustain, and complete written work. These may include:

- Reduced motivation and task initiation, making it difficult to begin writing
- Difficulties with sustaining attention and maintaining writing momentum
- Reduced processing speed and cognitive energy, particularly during periods of low mood or fatigue
- Challenges with organising and structuring ideas into coherent written language
- Increased anxiety related to writing tasks, including fear of making mistakes or producing work that is not “good enough”
- Tendencies toward perfectionism, leading to over-editing, avoidance, or delayed completion

These problems may be further compounded in medical and health-related courses, where students are required to accurately produce complex specialist medical and scientific terminology, alongside structuring detailed academic responses. As a result, writing tasks may feel overwhelming, effortful, and difficult to sustain, with increased likelihood of avoidance, disruption to thought processes, and reduced confidence.

Lightkey Medical is recommended as a specialist composition tool to support the student during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, while reducing cognitive demand and supporting continuity of thought.

Standard tools such as Microsoft Word or Google Docs primarily provide post-error correction, requiring the student to independently generate text before support is provided. This can increase pressure, interrupt writing flow, and contribute to anxiety, particularly where there is concern about accuracy or difficulty initiating tasks. While planning tools such as mind mapping software may support the organisation of ideas prior to writing, they do not address the challenges associated with initiating, sustaining, and completing writing during composition itself, particularly where motivation and cognitive energy fluctuate.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students experiencing mental health difficulties, challenges often arise across the full composition process, particularly in initiating writing, sustaining effort, and managing the cognitive and emotional demands involved.

Where specialist terminology is required, this increases the cognitive burden further, as students must recall and accurately apply technical vocabulary while managing reduced energy, focus, or confidence.

Lightkey Medical supports this process by providing scaffolded, real-time support, making writing more accessible, manageable, and less cognitively demanding.

How Lightkey Medical Supports Composition

1. Supporting Task Initiation and Reducing Avoidance

Where there are difficulties with motivation or initiating tasks, Lightkey Medical provides predictive suggestions that act as prompts, helping the student to begin writing and overcome the barrier of a blank page. This is particularly beneficial where anxiety or low mood impacts task initiation.

2. Supporting Writing Momentum and Sustained Engagement

Lightkey Medical supports continuous writing by reducing the need to pause for spelling, phrasing, or terminology recall. This helps maintain writing flow and reduces the likelihood of disengagement or task abandonment.

3. Reducing Cognitive Load and Supporting Processing

By predicting words and phrases in real time, including specialist medical terminology, Lightkey Medical reduces the mental effort required to construct written language. This is particularly beneficial where cognitive fatigue, reduced processing speed, or “brain fog” are present.

4. Reducing Anxiety and Supporting Confidence

Lightkey Medical supports writing in a way that minimises visible errors during composition, reducing anxiety associated with making mistakes. This can create a more positive and less pressured writing experience, particularly where perfectionism or fear of failure is present.

5. Supporting Sentence Construction and Organisation

Context-aware predictions support the formulation and structuring of sentences as they are written, helping the student organise ideas more effectively and produce clearer, more coherent written work.

6. Supporting Expression During Fluctuating Capacity

Where mental health conditions fluctuate, Lightkey Medical supports writing during periods of reduced energy or concentration by lowering both cognitive and physical effort, enabling the student to continue expressing ideas with less strain.

Lightkey Medical learns from the individual user over time, adapting to their writing style, vocabulary, and subject-specific language. This personalised support promotes greater consistency and reduces the cognitive effort required to produce academic writing, particularly where repeated use of technical terminology is required.

Its AI functionality is assistive rather than generative, meaning it supports the student's own writing without producing original content independently. All processing occurs locally on the device, ensuring data privacy and alignment with academic integrity requirements.

Additional benefits include:

- **Distraction-reduced interface:** supports focus and reduces overwhelm
- **Reduced keystrokes:** lowers effort and supports sustained engagement
- **Predictive support for specialist terminology:** reduces reliance on memory
- **Optional read-aloud functionality:** supports multi-sensory reinforcement
- **Integration with text-to-speech tools:** enhances accessibility
- **Specialist medical dictionaries:** support accurate academic and clinical language
- **Offline functionality:** ensures data privacy and reliability

Where a student's primary difficulty lies in initiating, sustaining, and managing the cognitive and emotional demands of written composition, particularly where accurate use of specialist terminology is required, Lightkey Medical addresses these challenges by supporting the real-time construction of written language, reducing cognitive load, supporting confidence, and enabling more consistent, fluent, and manageable writing. While planning tools may support



idea generation, they do not address the barriers experienced during the act of writing itself.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students experiencing mental health difficulties within courses requiring complex medical and scientific language.

Physical Disability

Writing and Reviewing Academic work

Given the student's diagnosis, significant challenges can arise with the process of written composition, particularly where difficulties with the mechanics of writing and typing impact the ability to produce written work efficiently. These may include:

- Reduced dexterity and fine motor control, affecting typing accuracy and speed
- Difficulties with handwriting and keyboard use, impacting written output
- Reduced strength and endurance, leading to fatigue during writing tasks
- Increased pain or discomfort when typing for sustained periods
- Slower processing and output speed, due to the physical effort required
- Difficulty sustaining writing effort, particularly for longer academic tasks
- Increased cognitive load, where physical effort interferes with the ability to focus on language, structure, and meaning

These challenges may be further compounded in medical and health-related courses, where students are required to accurately produce complex specialist medical and scientific terminology, increasing both physical and cognitive demands during writing.

As a result, writing tasks may be slow, effortful, and physically demanding, with interruptions to both the mechanical and cognitive aspects of composition.

Lightkey Medical is a specialist composition tool, designed to support the student during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences while significantly reducing the physical effort required to produce text, including complex terminology.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with physical disabilities, the mechanical effort required to produce text can interfere directly with this process, making it difficult to sustain attention to content and meaning.

While tools such as mind mapping software may support the planning stage

of writing, they do not address the challenges that arise during the act of composition itself, particularly where physical effort limits the ability to translate ideas into written language.

Lightkey Medical supports composition by reducing both the physical and cognitive demands of writing, enabling the student to focus more effectively on expressing ideas and applying specialist terminology.

Standard tools such as Microsoft Word or Google Docs require full manual input of words and rely on post-error correction, which does not address the physical demands of typing or the effort required to produce written work. While speech-to-text (STT) may be appropriate in some contexts, there are situations within academic settings where its use may not be practical or permitted. Lightkey Medical therefore provides an effective and flexible alternative for supporting written composition via keyboard input.

How Lightkey Medical Supports Composition

1. Reducing Physical Effort and Fatigue

Lightkey Medical predicts and completes words and phrases after only a few keystrokes, including complex medical terminology, significantly reducing the amount of typing required. This minimises repetitive movement, reduces strain, and supports longer periods of writing with less fatigue.

2. Supporting Writing Fluency Despite Motor Difficulties

By reducing the need for continuous manual input and correction, Lightkey Medical enables a more continuous writing process, even where typing is slow or effortful. This helps maintain writing flow and reduces disruption caused by physical limitations.

3. Reducing Cognitive Load Associated with Physical Effort

Where significant effort is required to type, cognitive resources may be diverted away from composition. Lightkey Medical reduces this burden by supporting spelling, phrasing, structure, and terminology in real time, allowing the student to focus on meaning and content.

4. Minimising the Need for Error Correction and Repetitive Movements

Lightkey Medical supports inline corrections and predictive completion, reducing the need for backspacing, cursor movement, or mouse use. This is particularly beneficial where repetitive actions increase discomfort or fatigue

5. Supporting Expression During Fatigue or Fluctuating Conditions

Where physical conditions fluctuate, including periods of fatigue or “brain fog”, Lightkey Medical supports word retrieval and sentence construction, enabling the student to continue expressing ideas with reduced effort.

Lightkey includes adaptive functionality designed to respond to differences in typing ability. Its predictive system processes keystrokes in real time and adjusts the level of support provided.

The Toggle Button enables Lightkey Medical to balance prediction accuracy with coverage of user needs.

- Fewer suggestions increase precision
- More suggestions increase coverage and reduce keystrokes

For students with physical difficulties, Lightkey Medical can operate in a more proactive mode, increasing prediction coverage and reducing the number of keystrokes required. This helps to minimise both physical strain and cognitive effort, while maintaining effective and accurate writing support.

This adaptive approach ensures a tailored and accessible writing experience, supporting efficiency, comfort, and sustained engagement.

Additional Accessibility Benefits include

- **Reduced keystrokes:** minimises physical strain and effort
- **Predictive support for specialist terminology:** reduces typing demand for complex vocabulary
- **Support for alternative input methods:** compatible with assistive setups
- **Distraction-reduced interface:** supports focus during effortful tasks
- **Optional read-aloud functionality:** supports multi-sensory reinforcement
- **Integration with text-to-speech tools:** enhances accessibility
- **Specialist medical dictionaries:** support accurate academic and clinical language
- **Offline functionality:** ensures data privacy and reliability

Where a student’s primary difficulty lies in the mechanical and physical demands of composing written work, which significantly impact the overall process of composition, particularly where accurate use of specialist terminology is required, Lightkey Medical addresses these challenges by supporting the real-time construction of written language, reducing physical effort, minimising cognitive load, and enabling more efficient, fluent, and accessible writing.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with physical disabilities undertaking courses requiring complex medical and scientific language.

Dyscalculia

Writing and Reviewing Academic work

Given the student's profile of dyscalculia, significant challenges associated with the process of written composition can arise, particularly where difficulties with sequencing, working memory, and organisation impact the ability to structure and produce written work. These may include:

- Difficulties with sequencing information, affecting sentence structure and logical flow
- Reduced working memory capacity, impacting the ability to hold and organise ideas while writing
- Challenges with structuring and organising written expression
- Difficulties with processing and integrating numerical or structured information within written work
- Increased cognitive load, particularly when managing multiple elements of writing simultaneously
- Anxiety related to numbers, structure, or accuracy, which may extend into written tasks
- Reduced confidence in organising and presenting information clearly

These challenges may be further compounded in medical and health-related courses, where students are required to integrate structured, technical, and specialist medical terminology, alongside presenting information clearly and logically.

As a result, writing tasks may become disjointed, effortful, and difficult to structure, with increased likelihood of disruption to thought processes and reduced fluency.

Lightkey Medical is recommended as a specialist composition tool, designed to support the student during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, supporting structure, sequencing, continuity, and the accurate use of specialist terminology.

Standard tools such as Microsoft Word or Google Docs primarily provide post-error correction, requiring the student to independently generate text before support is provided. This does not address the underlying difficulties in sequencing, structuring, and organising written language.

While tools such as mind mapping software may support the planning stage

of writing, helping students to organise ideas before writing begins, they do not address the challenges that arise during the act of composition itself, particularly where students experience difficulty translating structured ideas into coherent written language. Also, at times this strategy may be unsuitable given the nuances of the condition.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with dyscalculia, difficulties often arise in the organisation, sequencing, and structuring elements of this process, rather than in content knowledge alone.

Where specialist terminology and structured information are required, this increases cognitive demand further, as students must integrate precise vocabulary within logically organised written responses.

Lightkey Medical supports this process by providing structured, real-time support during writing, helping to organise language and terminology as it is being produced.

How Lightkey Medical Supports Composition

1. Supporting Sequencing and Organisation of Ideas

Lightkey Medical's predictive word and phrase suggestions support the logical progression of sentences, helping the student organise ideas more effectively as they write. This reduces difficulties with sequencing and supports clearer written structure, particularly when integrating structured or technical content.

2. Reducing Cognitive Load and Supporting Working Memory

By predicting and completing words and phrases, including specialist medical terminology, Lightkey Medical reduces the need to manage spelling, syntax, structure, and terminology simultaneously. This supports working memory and allows the student to focus on meaning and organisation.

3. Supporting Writing Fluency and Flow

Real-time predictive support reduces pauses associated with constructing sentences independently or recalling terminology, enabling a more continuous writing process and reducing fragmentation in written output.

4. Reducing Anxiety and Frustration

Where anxiety related to structure, sequencing, or accuracy impacts writing, Lightkey Medical reduces the need for repeated correction and backspacing. By supporting writing in real time, it helps create a smoother, more manageable writing experience.

5. Supporting Structured Expression and Clarity

Multi-word and phrase-level predictions provide scaffolded support, helping the student construct sentences in a more structured and coherent way. This is particularly beneficial where organising written language is challenging.

6. Supporting Integration of Structured and Numerical Information

Lightkey Medical reduces the cognitive demand associated with incorporating structured or numerical information into written work, enabling the student to integrate this content more effectively alongside explanatory text.

Lightkey Medical adapts to the individual user over time, learning their writing style, vocabulary, and subject-specific language. This ensures predictions become increasingly relevant and supportive, particularly where repeated use of technical and structured terminology is required.

Its AI functionality is assistive rather than generative, meaning it supports the student's own writing without producing original content independently. All processing occurs locally on the device, ensuring data privacy and alignment with academic integrity requirements.

Additional benefits include:

- **Reduced cognitive load:** supports sequencing and organisation
- **Predictive support for specialist terminology:** reduces reliance on memory
- **Predictive phrase support:** aids structured and coherent writing
- **Reduced need for correction:** supports writing flow and reduces frustration
- **Optional read-aloud functionality:** supports multi-sensory reinforcement
- **Specialist medical dictionaries:** support accurate academic and clinical language



- **Offline functionality:** ensures data privacy and reliability

Where a student's primary difficulty lies in the organisation, sequencing, and structuring of written composition, alongside increased cognitive load and anxiety related to structured tasks, particularly where specialist terminology is required, Lightkey Medical addresses these challenges by supporting the real-time construction of written language, enabling more coherent, structured, and fluent writing.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with dyscalculia undertaking courses requiring complex medical and scientific language.

Visual Impairment/Vision loss

Writing and Reviewing Academic work

The process of written composition can be significantly impacted where there are visual difficulties affecting access to text, tracking, and sustained engagement with written work. Difficulties may include:

- Reduced visual acuity, affecting the ability to read and produce written text
- Difficulties with visual tracking and eye movement, impacting continuous reading and writing
- Increased visual fatigue, particularly during extended writing tasks
- Difficulty navigating complex on-screen layouts, including toolbars, menus, and visual clutter
- Slower reading and writing speed, due to increased visual effort
- Increased cognitive load, where visual effort interferes with the ability to focus on content, structure, and meaning

These challenges may be further compounded in medical and health-related courses, where students are required to accurately read, produce, and review complex specialist medical and scientific terminology, increasing visual and cognitive demand.

As a result, writing tasks may be tiring, fragmented, and difficult to sustain, with interruptions to both reading and composition processes.

Lightkey Medical is recommended as a specialist composition tool, designed to support the student during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences with reduced visual and cognitive effort, including the accurate use of specialist terminology.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with vision loss, the visual effort required to access, track, and produce text can interfere directly with this process, making it more difficult to sustain attention to meaning and structure.

Lightkey Medical supports composition by reducing the visual, physical, and cognitive demands of writing, enabling greater focus on content and meaning.

Standard tools such as Microsoft Word or Google Docs often rely on interaction with toolbars, ribbons, and visual prompts, which can be visually overwhelming and difficult to navigate, increasing strain and interrupting writing flow.

How Lightkey Medical Supports Composition

1. Reducing Visual Clutter and Supporting Accessibility

Lightkey Medical offers a clean, high-contrast workspace with customisable visual settings, allowing the student to adjust text size and contrast. This reduces visual clutter and improves readability, supporting more comfortable writing over extended periods.

2. Supporting Writing with Reduced Visual Tracking Demand

Lightkey Medical predicts words and phrases after only a few keystrokes, including complex medical terminology, reducing the amount of text the student needs to visually track. This is particularly beneficial where eye movement or tracking difficulties impact writing fluency.

3. Reducing Visual Fatigue and Supporting Sustained Writing

By reducing the need for constant reading, correction, and navigation, Lightkey Medical enables a smoother writing process with fewer visual interruptions, supporting sustained engagement.

4. Supporting Writing Fluency with Reduced Need for Visual Correction

Predictive support reduces the need to repeatedly scan and correct text visually, enabling a more continuous composition process and reducing visual strain.

5. Supporting Use with Assistive Technologies

Lightkey Medical works effectively alongside screen magnifiers, Braille displays, and other vision-related assistive technologies. By reducing typing demand and simplifying interaction, it supports more efficient and accessible workflows.

Lightkey Medical also includes adaptive functionality designed to optimise the balance between prediction accuracy and usability. Its system processes keystrokes in real time, evaluating context and adjusting the level of predictive support provided.

The Toggle Button allows the level of prediction to be adjusted, increasing or reducing the number of suggestions displayed. This is particularly relevant for students with vision loss, where excessive on-screen information can increase visual strain and cognitive effort.

By optimising the number and relevance of predictions:

- Visual scanning is reduced
- Decision-making demands are lowered
- On-screen information remains clear and manageable

This adaptive approach ensures that predictions are concise, relevant, and accessible, reducing both visual fatigue and cognitive effort, and enabling more sustained and efficient composition.

Lightkey Medical's AI functionality is assistive rather than generative, meaning it supports the student's own writing without producing original content independently. Its predictions are based on the user's own input and adapt over time to reflect their writing patterns, vocabulary, and subject-specific language. All processing occurs locally on the device, ensuring data privacy and alignment with academic integrity requirements.

Additional benefits include:

- High-contrast, customisable interface: improves readability and reduces visual strain
- Reduced keystrokes: minimises visual and physical effort
- Predictive support for specialist terminology: reduces need for visual checking of complex vocabulary
- Optional read-aloud functionality: supports auditory reinforcement of text
- Compatibility with assistive technologies: supports accessible workflows
- Offline functionality: ensures data privacy and reliability

Where a student's primary difficulty lies in the visual demands of accessing, producing, and reviewing written language, which significantly impacts the overall process of composition, particularly where specialist terminology is required, Lightkey Medical addresses these challenges by reducing visual load, cognitive effort, and interaction complexity, enabling more accessible, efficient, and sustained written expression.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with vision loss undertaking courses requiring complex medical and scientific language.

Hearing Loss

Writing and Reviewing Academic work

Given the nature of the disability, significant challenges can arise in the process of written composition, particularly where differences in phonological processing, language acquisition, and translation into written English impact written expression. These may include:

- Difficulties with phonological awareness, affecting spelling and word formation
- Challenges distinguishing similar speech sounds (e.g. /p/ vs /b/, /s/ vs /sh/)
- Difficulties mapping sounds to letters, particularly for unfamiliar or irregular words
- Differences in grammar, syntax, and sentence structure, particularly where language is learned visually rather than aurally
- Increased effort required to construct coherent and grammatically accurate sentences
- Additional cognitive demand when translating ideas into written English, particularly for BSL users
- Increased cognitive load and fatigue, due to continuous language processing and translation

These challenges may be further compounded in medical and health-related courses, where students are required to accurately produce and apply complex specialist medical and scientific terminology, increasing both linguistic and cognitive demand.

As a result, writing tasks may be effortful, fragmented, and cognitively demanding, particularly where the student must simultaneously manage meaning, structure, grammar, and terminology.

Lightkey Medical is recommended as a specialist composition tool, designed to support the student during the act of writing. It provides real-time predictive text at word and phrase level, enabling the student to construct sentences as they write, supporting grammar, structure, fluency, and the accurate use of specialist terminology.

Standard tools such as Microsoft Word or Google Docs primarily provide post-error correction, requiring the student to independently generate written language before support is offered. This does not address the underlying challenges associated with forming and structuring written language during composition. While tools such as mind mapping software may support planning and idea organisation prior to writing, they do not address the challenges that arise during the act of composition itself, particularly where students experience difficulty constructing written language or translating

ideas into grammatically accurate sentences.

Composition can be defined as the process of forming and organising ideas into coherent written language, including generating content, structuring sentences, selecting vocabulary, and maintaining meaning. For students with hearing loss, difficulties often arise in the construction of written language itself, particularly where phonological input is limited or where written English is not the student's primary language system.

Where phonics are impacted, individuals may not hear all the sounds of spoken English clearly enough to distinguish fine differences. This can make it difficult to spell unfamiliar words or those with unpredictable spelling patterns. If specific sounds cannot be perceived, it becomes significantly more difficult to connect them to written letters.

Lightkey Medical supports this aspect of composition by reducing reliance on phonological processing, instead supporting language construction through context, meaning, and learned patterns.

How Lightkey Medical Supports Composition

1. Supporting Phonological and Spelling Difficulties

Lightkey Medical provides predictive word and phrase suggestions based on context, reducing reliance on phonetic spelling. This supports students who may not be able to accurately map sounds to letters, enabling more fluent writing without needing to guess spelling.

2. Supporting Sentence Structure and Grammar Development

Students with hearing impairments may learn language patterns visually rather than aurally, which can affect grammar and syntax. Lightkey Medical provides real-time, context-aware suggestions that support correct sentence structure, including verb tense, articles, and prepositions.

3. Supporting Translation into Written English (BSL Users)

For students who use British Sign Language (BSL), written English is often a second or additional language. This requires translation from a visual-spatial language into linear written form, which can be cognitively demanding.

Lightkey Medical supports this process by:

- Predicting words and phrases based on context
- Supporting grammatically correct sentence formation
- Helping align written English structure with academic conventions
- Assisting with translating conceptual ideas into appropriate written

language

This reduces the cognitive load associated with continuous language switching and supports more fluent written expression.

4. Supporting Writing Fluency and Reducing Cognitive Load

By predicting whole words and phrases, including specialist medical terminology, Lightkey Medical reduces the need to focus on spelling, grammar, and structure simultaneously. This allows the student to focus on meaning and academic content.

5. Supporting Visual Language Processing

Lightkey Medical provides entirely visual, non-auditory feedback, including colour-coded suggestions and contextual prompts. This aligns with visual learning preferences and ensures accessibility without reliance on sound.

6. Supporting Confidence and Independence in Writing

By supporting writing in real time and reducing reliance on external correction, Lightkey Medical enables more independent writing. Its adaptive learning ensures that suggestions become more personalised over time, supporting consistent phrasing, improved structure, and academic tone.

Lightkey Medical adapts to the individual user, learning their writing patterns, vocabulary, and subject-specific language over time. This ensures predictions become increasingly relevant, particularly where repeated use of technical and discipline-specific terminology is required.

Its AI functionality is assistive rather than generative, meaning it supports the student's own writing without producing original content independently.

Additional accessibility benefits include:

- **Visual, non-auditory interface:** fully accessible for hearing-impaired users
- **Predictive phrase support:** aids grammar, structure, and fluency
- **Support for specialist terminology:** reduces reliance on memory and phonics
- **Reduced cognitive load:** supports language processing and translation
- **Colour-coded visual feedback:** supports clarity and ease of use
- **Optional read-aloud functionality:** supports reinforcement where appropriate
- **Specialist medical dictionaries:** support academic vocabulary and tone
- **Offline functionality:** ensures data privacy and compliance



Where a student's primary difficulty lies in the construction and translation of written language, particularly where phonological processing, grammar, and language structure are affected, alongside the additional demands of specialist terminology, Lightkey Medical addresses these challenges by supporting the real-time composition of written language, reducing reliance on phonics, supporting translation into written English, and enabling more fluent, accurate, and confident writing.

As such, Lightkey Medical represents a targeted, disability-specific intervention, appropriate to support academic writing for students with hearing loss undertaking courses requiring complex medical and scientific language.