Assistive Technology Assessment 2
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College of Education
Graduate Programs in Rehabilitation
Iowa Center for Assistive Technology, Education, and Research
ICATER Assistive Technology Device/Software Evaluation Form

Device or Software Name:

Kurzweil 3000 is an integrated scan and read (or comprehensive literacy support) software program that provides multisensory access to reading material with OCR and powerful tools for reading, writing, test-taking and learning. It is probably best known for delivering relatively high quality text-to-speech capacity (through its Neo Speech synthesizer voices). It combines this with document recognition options including optical character recognition (OCR) capability (multiple languages are supported) enabling the digital scanning of any document and incorporating it into the software. The scanning features preserves non-text content such as graphics and figures, as well as layout, from the original source document. This makes it possible to bring any printed document into the software.

Device or Software Category (1 Point):

Kurzweil 3000 falls into the Computer Access AT category, since it interprets text and graphics and renders them into speech. It also falls into the Instructional Aids AT category, since it is used extensively in working with students with autism, ADHD, and other disabilities that make reading of complex text difficult

Device or Software Cost (1 Point):

Kurzweil 3000 is available for a 30-day free trial, after which one must purchase a license. A single user license is available directly from Kurzweil Education for $1495. A five-user license is available for $3495.

Place on AT Continuum and Why? (2 Points):

Kurzweil 3000 falls primarily into the High Tech area of the AT Continuum. The functionality that characterizes it as a High Tech entity are that it requires relatively sophisticated electronics (e.g., a personal computer (or Mac) with a relatively large screen, and a properly configured version of the Windows (or Mac O/S) operating system), a power source (i.e., electric current, or a battery), and it contains relatively sophisticated code to perform its functions. Characteristics that place Kurzweil 3000 in the Mid-tech area include wide availability (via their website and through numerous

educational and non-profit service organizations), and some training to become familiar and comfortable with its functionality (although the product is quite intuitive).

Who can this device or software benefit and how? (3 Points):

Kurzweil 3000 provides comprehensive literacy support through a relatively advanced text-to-speech processor that is also capable of interpreting complex objects such as graphics, video, charts, etc. However, it is also an educational tool that can provide students with assistance relative to reading and writing, and even furnishing assistance with study skills and test-taking through biomodal text reading (i.e., where text is vocalized along with the student reading the text). It contains numerous interfaces that leverage external resources as well, (i.e., online dictionaries and scanned documents). According to its documentation, Kurzweil 3000 is appropriate for students who have the cognitive capacity to learn at their grade level, but not the reading capacity; for instance, students who have dysgraphia or dyslexia, visually impaired students, or students who are English language learners (refer to the documentation at kurzweiledu.com for more details). In addition, students who have attention deficient (hyperactivity) disorder (ADD/ADHD), autism spectrum disorder (ASD), or even learning disabilities can profit from the functionality of Kurzweil 3000. Additionally, features such as study skills support make Kurzweil 3000 an appropriate tool for use with proficient learners/readers, making it a universal design tool (UDL) tool appropriate for an inclusion classroom comprising students of mixed capabilities.

Create a comprehensive list of device or software features and explain how each works: (4 Points)

Kurzweil 3000 contains a very rich palette of functionality for the user requiring text-to-speech capability, but its functionality extends well beyond that to incorporate an impressive set of tools to facilitate reading comprehension for those with a wide range of disabilities, as noted above.

Procurement and installation are simple. From the kurzweiledu.com website, the appropriate version is downloaded. The user receives an email containing license and user ID/password information.   The software installs based upon typical or custom configuration, and the user provides the appropriate license keys to enable the software.

Below is a table that provides a summary of the key features of Kurzweil 3000 (there are dozens more):

Function/Window	Feature	Description
Kurzweil 3000	Kurzweil 3000 Home page	Access menu bar and ribbon features (tabbed pages for **Read**, **Write** and **Scan**), Read buttons, Audio toggle, and quick access Option menus. The menu bar, ribbon, and Option menus are available on all the tabbed pages.

		Additionally on the Kurzweil 3000 page, Read the Tip of the Day, Open recent documents, Open from the Library, Write New Draft, New Brainstorm, and New Outline, and Scan Documents.
Kurzweil 3000	Read tabbed Page	Click the **Read** tab to access frequently used Reading tools.
Kurzweil 3000	Write tabbed Page	Click the **Write** tab to access frequently used Writing tools, including those in the Writing Path.
Kurzweil 3000	Scan tabbed Page	Click the **Scan** tab to access frequently used Scanning tools.
Kurzweil 3000	Read buttons	Use these Buttons for reading (stop, start, forward, and backward) and audio control (silent or audible)
Kurzweil 3000	Audio Toggle	Click the Audio button to toggle between audible and silent.
Kurzweil 3000	Option menus	Quick Access Menus for Audio, Reference, and Online features
Reading	Start	To Start Reading
Reading	Pause	**To Pause Reading**
Reading	Previous	To **Read previous reading unit**
Reading	Next	To **Read next reading unit**.
Reading	Mute	To switch between **Reading audibly or silently**.
Reading	Reading Speed	Specify the speed with which you want to read
Reading	Reading Voice	Specify the voice that you want to hear reading.
Reading	Reading Mode	Specify how you want Kurzweil 3000 to read
Reading	Reading Units	Specify how much text to highlight as Kurzweil 3000 is reading
Reading	Reading Language	Specify the language
Writing	Start Writing	In the Writing Tools Palette, click the New Draft button. Begin writing.
Writing	Create New Text/Draft Document	Do one of the following: In the Kurzweil 3000 tabbed page, click the New Draft button. From the Write menu or File menu, select New Draft Blank. Begin writing.
Writing	Create New Document from Template	From the Write menu, select: New from Template. Or New Outline from Template. Or New Draft from Template. Begin writing by replacing the instructions with your own text.
Writing	Start New Brainstorm Diagram	From the Write menu or the File menu, select New Brainstorm Blank. Or from the Kurzweil 3000 tabbed page click the New Brainstorm button. Begin writing from a diagram by clicking the Split Screen button, and writing in the right-hand Draft pane
Writing	Start New Outline	From the Write menu or the File menu, select New

	Document	Outline Blank. Or from the Kurzweil 3000 tabbed page click the New Outline button. Begin writing from an Outline document by clicking the Draft View button in the Outline palette.
Edit	Undo	Undo your previous action.
Edit	Cut	Cut selected text from a text document.
Edit	Copy	Copy selected text from a document.
Edit	Paste	Paste cut or copied text into a text document or into Notes. Or paste an image into a text file.
Edit	Select All	Select all of the text in a document.
Edit	Image Selector	Select part of an image document for copying.
Edit	Insert Page Break	Place a page break at the current cursor position in text documents.
Edit	Insert Picture	Insert a picture from any file into a text document.
Edit	Picture Properties	Change properties, such as dimension, or add a border for selected picture.
Edit	Enable Editing	Allow or prevent document editing.
Edit	Move Existing Page	Reorder pages in image documents.
Edit	Correct Recognition	Correct underlying text in image documents.
Edit	Find	Find and replace text and find highlights in typed documents. Find text, notes, highlights, or bookmarks in image documents.
Edit	Change Word Spacing	To increase the readability of text, set this option and other text formatting and viewing options in the **Text Options** pane. See "Setting Options in Kurzweil 3000" on page 45.
Edit	Enable Phonetic Spelling	Enable this option to help students find and correct phonetic errors. It can be found in the **Word Prediction Options** pane. See "Setting Options in Kurzweil 3000" on page 45.
Edit	Find Homophones	Kurzweil 3000 provides three levels of homophones to help students identify and correct common homophone errors. For information about word lists, see "Using Word Lists" on page 38 and "Setting Up Word Lists" on page 58.
Edit	Limit Spelling Suggestions	Too many options may confuse instead of help students. Specify to **Always** or **Never Limit Spelling Suggestions**. This option is in the **Spell Check Options** pane. See "Setting Options in Kurzweil 3000" on page 45. To have students decide for themselves: select **Add option to spelling window** to enable the **Fewer/More Suggestions** button in the **Spelling** dialog.
View	Fit To	Specify how an image file is displayed in the document area.
View	Rotate	Rotate an image file 90o left or right, or turn it upside down.

| View	Thumbnails	Display a thumbnail of the current page at the right side of the document area, or display the entire document as thumbnails in various sizes.
View	Page View	Set to **Remember** the page fit and zoom level selections for an image document. Save the document with the page view settings before closing it.
View	Annotations	Display or hide Notes, including Bubble Notes, Voice Notes, Highlighting, and Bookmarks in image documents.
View	Magnify Spoken Word	Display the current word in a separate magnifier window.
View	Language list	Select other reading languages.
View	Speaker list	Change reading voices.
View	Pause at Empty Notes	Use in conjunction with Text Notes in Fill in the Blanks tests.
View	Highlight Spoken Word	Highlight or not highlight words as Kurzweil 3000 reads.
View	Change highlight colors	For text documents, click the **Text** icon to open the **Text Options** pane, and select the desired color combination from the **Reading Colors** list. For image documents, click the **Image** icon to open the **Image Options** pane, and select the desired colors from the **Word** and **Unit Colors** lists.
Study Skills	Highlight or circle text	Select the text to highlight or circle, then click the desired color **Highlighter** pen or **Circle** tool in the **Tools Palette**. Or click the color **Highlighter** or **Circle** tool first then select the text.
Study Skills	Erase highlights or circles	Select the text that has color highlighting or circling, then click the **Eraser** in the **Tools Palette**. Or click the **Eraser** first then select the highlighted or circled text.
Study Skills	Find highlighted or circled text	Open the **Edit** menu, select **Object** from the **Find** submenu. In the **Find Object** dialog, select **Highlight**. Click **Find**.
Study Skills	Create a Sticky Note or a Text Note	Sticky and Text Notes are available only in image documents. Click the **Sticky Note** button on the **Tools Palette**. Or open the Tools menu on the menu bar, click **Notes** and choose **Add Sticky Note** or **Add Text Note**. Click in the text where you want to place the note. Type in the note, click outside the note when you are finished.
Study Skills	Create a Footnote	Click in the document where you want to place the Footnote marker. Click the **Footnote** button on the **Tools Palette**. In an image document, a number marker appears in the note location and the Footnote window opens. In a text document, the text closest to the note changes to blue underlined text and a number appears next to the note.

		Type in the **Footnote** window. When you are finished, click the **Close Footnote** button in the **Tools Palette**.
Study Skills	Create a Voice Note	Click the **Voice Note** button on the **Tools Palette**. Click in the document where you want to place the Voice Note. (In a text document, click in front of the word where you want to place the note.) In the **Voice Note** window, click **Record** (microphone), then begin recording. Click **Stop** when you are done. To attach a pre-recorded WAV file, click **Open**. Navigate to the file and click **Open** again.
Study Skills	Move a Sticky or Text Note using the mouse	Point to the border of the note to see a four-pointed compass. With the compass cursor showing, click and drag the note to a new location.
Study Skills	Move a Sticky or Text Note using the keyboard	**TAB** to the desired note. Press the **Menu** key to display the **Note** Right Mouse Button menu. Press the **Down Arrow** until **Move Note** is highlighted, then press **ENTER** to select. Use the **Arrow** keys to reposition the note. If you need to cancel, press **ESC** key.
Study Skills	Move a Footnote marker	Works in image documents only. Click and hold on the **Footnote** marker, then slowly drag it to its new location on the same page.
Study Skills	Resize a Sticky or Text Note using the mouse	Point to the right-hand border of the note to see a two-pointed, left-right arrow cursor. With the cursor showing, click and drag the note to a new size.
Study Skills	Resize a Sticky or Text Note using the keyboard	**TAB** to the desired note. Press the **Menu** key to display the **Note** Right Mouse Button menu. Press the **Down Arrow** until **Resize Note** is highlighted, then press **ENTER** to select. Use the **Arrow** keys to reposition the note. If you need to cancel, press **ESC** key.
Study Skills	Edit Sticky or Text Notes or Footnotes	You can cut, copy, drag and drop, and paste text between documents and Notes. Click inside a Sticky or Text Note, or double-click on the Footnote marker to open the Note. Edit the text; word processing functions work in Notes. When finished, click outside the Sticky or Text Note. For a Footnote, click the **Close** button on the **Tools Palette** or press **ESC**.
Study Skills	Switch between a Sticky and a Text Note	Click the right mouse button in a Sticky or Text Note to open the Note menu. Select **Sticky Note** or **Text Note.**
Study Skills	Find Notes	Open the **Edit** menu, select **Object** from the **Find** submenu.

|		In the **Find Object** dialog, select the type of Note you are looking for. Click **Find**.
Study Skills	Delete a Note	Click on the Note, **Note** marker or **Note** anchor. Click the **Delete** button in the **Notes menu** (right click in the Note to display). Click **Yes** to confirm.
Study Skills	Remove multiple Notes from an image document	Applies to Sticky, Text and Voice Notes. From the **Edit** menu, select **Image Selector**. Click and drag the crosshair cursor to draw a box completely enclosing all of the Notes you want to remove. Press the **Delete** key. Click **Yes** to confirm.
Study Skills	Text or Sticky Note	Click inside the note, then click the **Read** button. To close, click outside the Note.
Study Skills	Footnote	Double-click its anchor; Kurzweil 3000 automatically reads. To close, click the **Close** button in the **Footnote** window. You can set up Footnotes to automatically read upon opening, the option must be selected in the Reading Options. See "Setting Options in Kurzweil 3000" on page 45.
Study Skills	Bubble Note	Double-click its purple question mark anchor (image document) or purple underlined text (text document). Kurzweil 3000 automatically reads. To close, click **OK**.
Study Skills	Voice Note	Double-click its anchor, Kurzweil 3000 automatically reads. To close, click **OK**.
Study Skills	Open the Bookmark dialog	Click the **Bookmark** button on the toolbar.
Study Skills	Add a Bookmark	Click in the document where you want to place the bookmark. Open the **Bookmark** dialog, type the description, and then click **Add**.
Study Skills	Sort Bookmarks	Open the **Bookmark** dialog, click to sort by **Alphabetic** or **Reading** order.
Study Skills	Go to a Bookmark	Open the **Bookmark** dialog, click on the description of the Bookmark that you want to go to, then click **Go To**.
Study Skills	Delete a Bookmark	Open the **Bookmark** dialog, click on the desired description Bookmark, and then click **Delete**.
Study Skills	Search for Bookmarks	From the **Edit** menu, select **Object** from the **Find** submenu. In the **Find Object** dialog, select **Bookmark**, then click **Find**.

Describe the interface the user interacts with when using this program, how is this beneficial, what parts of it are confusing, and how it affects people with multiple disabilities (ex those with physical and visual impairments)? (3 Points)

Kurzweil 3000 operates with a well-designed GUI, with each object clearly labeled, and with workflow logically laid out. This product is thoughtfully designed in every respect. In addition, every graphical object can also be enabled through a keystroke combination. This facilitates usability for those who are not able (or patient enough) to accurately operate a point or other pointing device.

The initial screen is the Kurzweil 3000 tabbed page. The Main Menu occupies the top of the page. Beneath the Menu Bar is a ribbon of tabbed pages: Kurzweil 3000, Read, Write, and Scan.
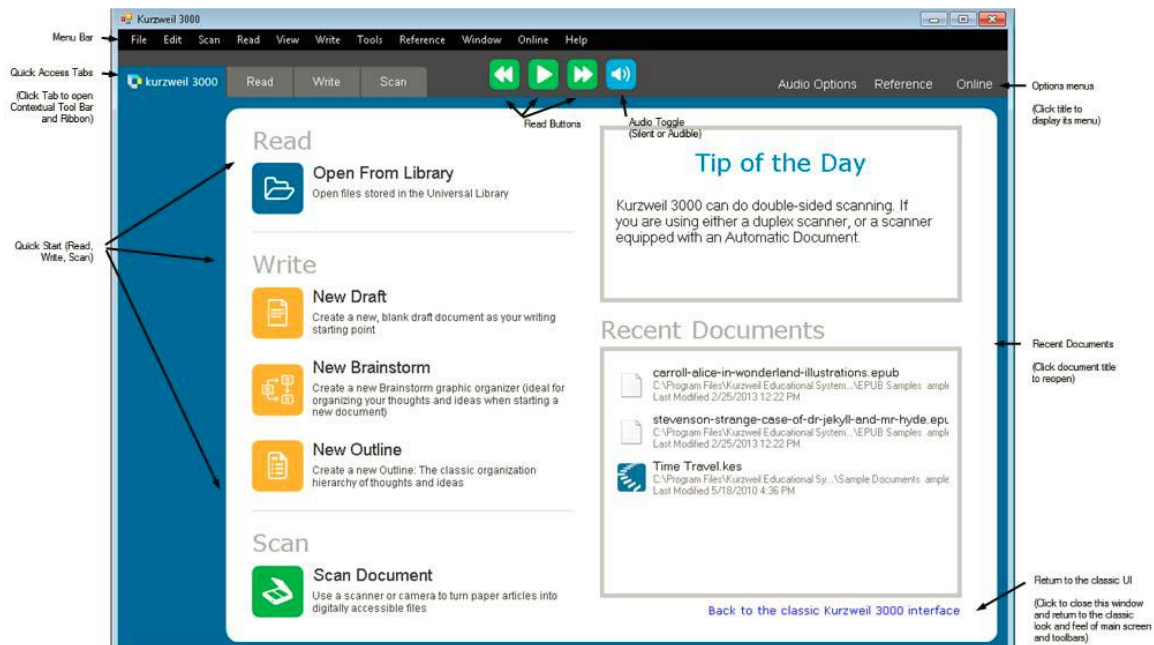
Beneath the Menu Bar are the toolbars that control the key functions. These are Kurzweil 3000, Read, Write, and Scan. The Kurzweil 3000 tab is the Home page and has several quick access features. The Read, Write, and Scan toolbar tabs each has a set of tools in a Palette along the left side of the window; you can point and click on palette buttons to perform frequently used functions.
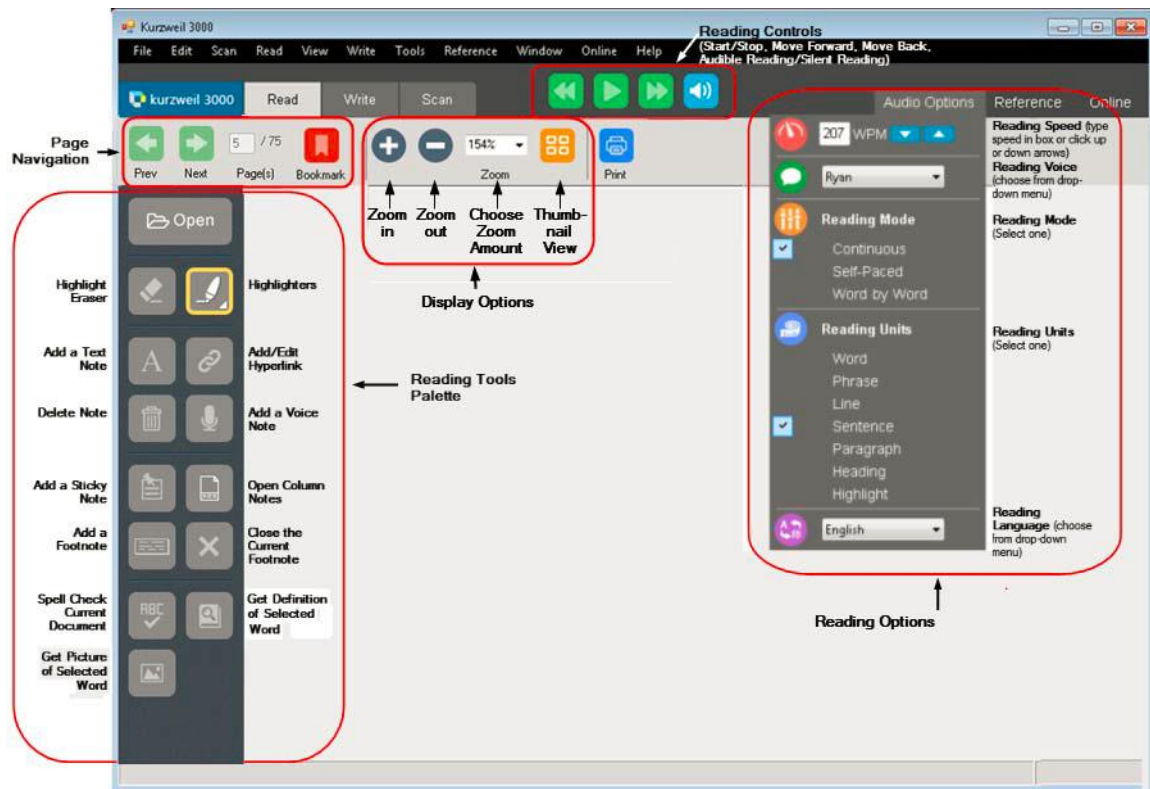
Each toolbar actuates specific funcationality (as outline in the section above). Here we will elaborate on the Read, Write, and Scan toolbars.

The Read toolbar is displayed by clicking the Read tab. Page navigation features are located on the left (i.e., previous and next page, entering a page number) It also contains an Add/Go to Bookmark button, Zoom controls, Display choices (Full page/Thumbnail toggle), and Print. The online help feature guides the user very capably through the details of the Read feature (see below).
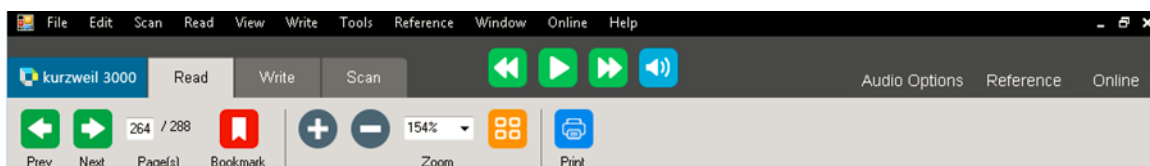
The Writing toolbar provided the capability to format or integrate text the user generates. To do so, they can simply click to activate the Writing Path views (i.e., Brainstorm, Outline, Split Screen, or Draft). Opening the Write tab displays a palette of tools below the toolbar on the left side of the page. The online help feature guides the user very capably through the details of the Write feature (see below).
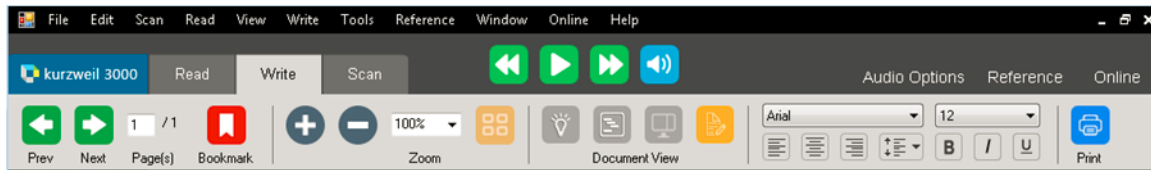
The Scanning toolbar includes buttons to open the Scanner Setup dialog, Zone Editor dialog, and Header/Footer dialog. Opening the Scan tab reveals a palette of tools below the toolbar on the left side of the page. The online help feature guides the user very capably through the details of the Scan feature (see below).
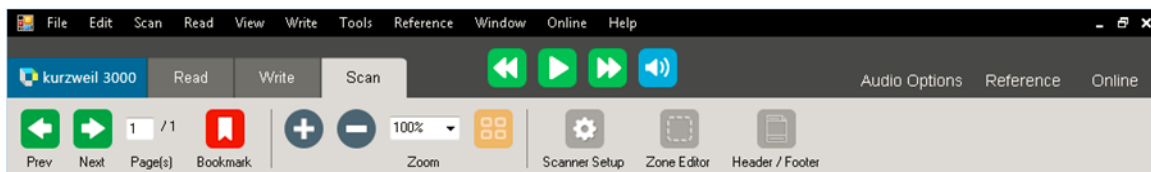
Interactive help is very well developed and geared toward assisting a beginning user of Kurzweil 3000. It is apparent that the help capability was designed to foster independent learning and support to the user.

To access Kurzweil 3000 comprehensive online Help pages, one can click the Help icon on the Main toolbar or press the F1 key. When in dialog boxes, one can click the Help button.

To search Help pages, type the search text in the Search text box and click Search. The Help feature provides a staggering amount of detailed information, but it is packaged in an easily consumable manner.

Further product documentation is available on the kurzweiledu.com website.

In summary, I found Kurzweil relatively simple to use and to learn. This was greatly facilitated by the excellent interactive help features which are fully supported by the text-to-speech functionality of Kurzweil 3000.

Compare and contrast this device or software to one similar product: (4 Points)

Read and Write Gold is available for nearly all Windows operating systems, as well as for Macintosh. Read and Write Gold has many of the same features as Kurzweil 3000, in

particular as relates to text-to-speech capabilities A complete list of the functionality contained within Read and Write Gold can be found at https://www.texthelp.com/en-us/products/read-and-write-family.

Unlike Kurzweil 3000, Read and Write Gold provides text masking out of the box (Kurzweil 3000 can be configured to support this). This is important for visually or behaviorally disabled users for whom large amounts of screen text are problematic, and who benefit from isolating a small area of text, and especially in a bimodal (text and speech) setting.

A cursory examination of the Read and Write Gold product resulted in these observations:

- Procurement and installation was as simple as for Kurzweil 3000
- The user interface was not as intuitive to me, nor as well-designed, as for Kurzweil 3000
- Text formatting and control, including font size, color, and contrast, were not as full-featured as for Kurzweil 3000
- Reading capabilities including references (i.e., dictionaries, thesauruses) was the same as for Kurzweil 3000
- Writing capabilities were not quite as full-featured as for Kurzweil 3000
- Study features were not as full-featured as for Kurzweil 3000 (e.g., brainstorming, bookmarking, highlighting).

The pricing model for Read and Write Gold also differs somewhat from that of the Kurzweil. Licenses are available for educational institutions as well as for corporatations. An individual educational license is available for $645, which is the same price as the educational license. These licenses differ only slightly, with the corporate version geared to support users of English as a Second Language (ESL) or with dyslexia, while the education package is geared to the student market. I couldn't find multi-user pricing for Read and Write Gold. More information is available at https://www.texthelp.com/en-us/products/read-and-write-family.

What difficulty would someone using this program encounter? (2 Points)

One model for evaluating the efficacy of software is to compare and contrast four factors: usability, value, adoptability, and desirability (adopted from Guo, 2012).

Usability is about how easily users can complete their intended tasks using a product. Kurzweil 3000 is thoughtfully designed to assure ease of use and a logical flow between features, and it is apparent that it was developed with an eye toward supporting students with various disabilities (e.g. dysgraphia, dyslexia, attention deficient (hyperactivity) disorder (ADD/ADHD), autism spectrum disorder (ASD)). I expected that a product with functionality as broad an deep as this one would suffer from usability issues, but I discovered the entire package was written in a consistent, robust, and compliant manner

Value is related to the other elements of user experience such as usability and desirability, but essentially correlates to a product's functionality and features. As noted above, Kurzweil 3000 has a uniquely rich palette of features and functionality. The price point could be an issue, given the basic product lists for roughly $1500. More than one author, aware of the funding and budget difficulties that may arise, suggested acquiring the 30-day trial license, and simply moving it to another computer at the conclusion of the trial, until funding becomes available. I am not an advocate of such an approach, but the idea seems to have broad currency.

Adoptability relates to the ease of access to the features of a product, while value relates to a product's features and content. To improve adoptability, a product should address the natural context in which a user first gets exposed to their product and how it impacts the design of the workflow. As noted above, Kurzweil 3000 is designed with two constituencies in mind – those who are visually impaired, and those with a range of behavioral or learning disabilities. In this case, I found that the workflow between and among the features is seamlessly driven by the fundamental tasks of the disabled user. This is seen most clearly in the Study Skills area, which is tighly integrated both with the Read/Write/Scan functions, but also with functions supporting notation, reference, and external sources.

Finally, a desirable product must be engaging and relevant to users, without sidetracks and loose ends. Kurzweil 3000 definitely scores well in this area. I went to kurzweiledu.com and reviewed some of the blog entries, as well as some external wikis for users, and there seems to be a high degree of user satisfaction with Kurzweil 3000.

Discuss the amount of training necessary to use this properly. (1 Point)

Given the plethora of training and documentation available, along with interactive guidance available through the accompanying DVD, the learning curve is relatively flat, and a user should be able to utilize most of the key functions within a day or two. There are online tutorials that compliment the DVD, and extensive third-party support as well.

What changes to the device or software need to be made to make it better work for its target population? (2 Points)

I tried very hard to pierce through any weaknesses in this product, and to identify areas for improvement. As it is mature, with a wide following, Kurzweil 3000 is a solid entry into this space.

As I have noted before, the main opportunity for Kurzweil Education to increase their coverage, exists with the advent of cloud computing. The ability to provide both instantaneous software updates, as well as interactive support for solving technical issues, would be a definite plus for users, as well as for Kurzweil to identify new areas for product development.

What factors of this device may lead to abandonment? (2 Points)

The major factors that could lead a user to abandon Kurzweil 3000 are threefold: frustration with its capabilities; frustration with its performance; and frustration with the support. Any of these are sufficient to cause any user to slow or halt their user of Kurzweil 3000. In my limited experience, I would judge that users should take care to both ensure their hardware stack is up to the requirements that Kurzweil specifies, as well as maintaining software patches and otherwise ensuring they are on the current release. In addition, while I saw no particular performance deficit, setting reasonable expectations for the performance of the product is vital to user acceptance and adoption. Users with older equipment may find Kurzweil 3000 to be slower than they expect from the training tools. Finally, vendor support for technical and functional matters is crucial to maintaining good usage patterns. Even though Kurzweil Education makes no particualr commitment on response time, the wide availability of advice from a mature and enthuisatic user base makes getting help that much easier.