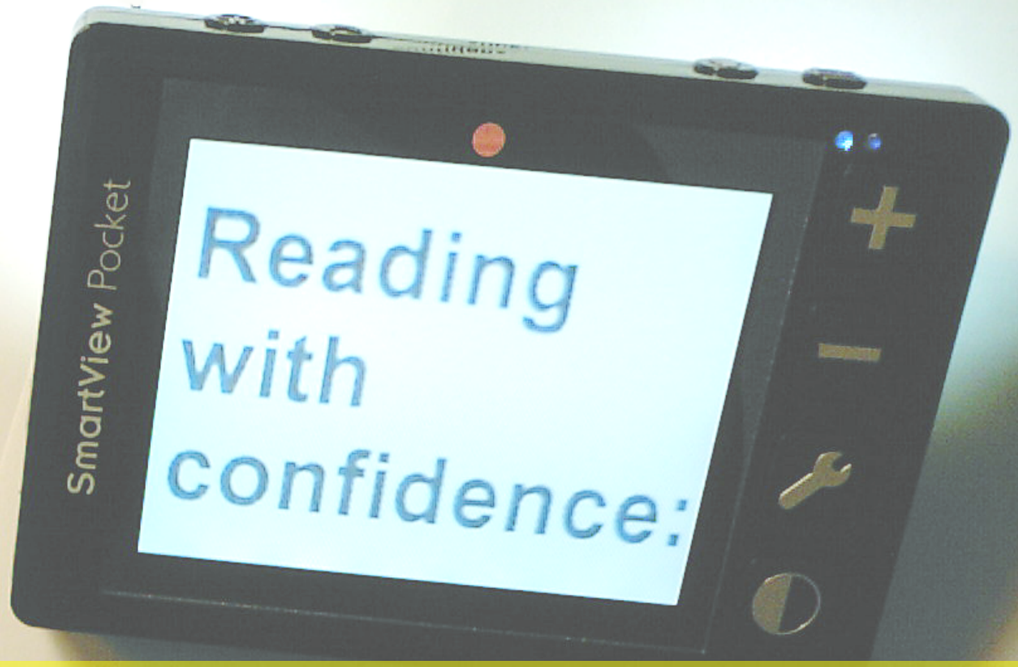

A report on the provision of electronic pocket magnifiers for children with sight problems in Wales.

Produced with support from

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WCB CCD

The Cambrian Educational Trust

Produced by Sophie Dyment

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Reading with confidence: a report on the provision of electronic pocket magnifiers for children with sight problems in Wales.

Sophie Dyment
Summer 2009.

Foreword

In a focus group research project, conducted by Jyoti Khadka from Cardiff University, children with a visual impairment from all over Wales reported that they weren't using the magnifiers that the Welsh Low Vision Service provided. The words of one of the children summed up why:

> *'I don't like to have magnifiers because I don't want to look different from my friends.'*

Univocally they told us that they preferred pocket electronic magnifiers because not only could they see better with them, but, they also looked cool.

The Welsh Assembly Government listened to what the children had to say and asked Wales Council for the Blind to help identify a clear list of products that would be suitable for children and young people to use. The assessment process and results are summarised in this report.

I am grateful to Sophie Dyment and all the team at Wales Council for the Blind for the excellent work they have done. They have equiped me with everything that I need to move forward in confidence to tender for the provision of pocket electronic devices through the Welsh Low Vision Service.

This process has demonstrated that, working together, we can change things for the better and has highlighted the importance and benefits of asking children for their opinions.

Barbara Ryan

Clinical Lead, Welsh Low Vision Service

CARDIFF UNIVERSITY
PRIFYSGOL CAERDYDD

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Reading with confidence: executive summary.

At Wales Council for the Blind, access to information is one of our most important priorities. It has been estimated that 80% of school tasks are based on vision[1], which indicates the enormous difficulties experienced by visually impaired children as they progress through school and beyond. “It is therefore imperative that appropriate levels of intervention and support are available to all visually impaired children and young people.”[2]

People with sight problems across Wales have access to the Low Vision Service provided for by the Welsh Assembly Government. This service offers Low Vision Aid assessments and provides a range of products, including optical magnifiers, to visually impaired people free of charge. However, research by Cardiff University concluded that children were not using the magnifiers provided. The children explained that the main reason for their disuse was the distasteful designs of the optical magnifiers. The children preferred electronic pocket magnifiers because of their increased magnification capabilities and stylish designs.

An electronic pocket size magnifier is a device powered by battery, which is used to display enlarged images on an integrated screen. They are often referred to as “pocket size” because they are small, portable and more discreet and socially acceptable than some other types of low vision aids. There are several types of electronic pocket size magnifiers, which allow the user to alter colour contrast levels as well as achieve good quality, high levels of magnification.

The Low Vision Scheme across Wales plans to extend its provision by including electronic pocket magnifiers for children to use at **home**. As such, Wales Council for the Blind carried out a six month project which independently reviewed all of the electronic pocket magnifiers on the market. The project enabled us to identify a clear list of products that would be suitable for children and young people to use.

WCB, jointly working with the education authorities, conducted 18 focus groups across Wales and worked with 44 children with sight problems. This, as well as feedback from professionals within the sector, enabled us to produce a ranked list of products. The five products which performed best were the SmartView Versa+, the SmartView Pocket, the Compact+,

[1] Manson, H L “Visual Impairment” (NASEN publication 1995)
[2] Department for Training and Education: “Educational Services for Visually Impaired Children and Young People” Consultation Document (Welsh Assembly Government publication, 28th May 2004)

the SenseView P430 and the Looky. WCB selected these as the preferred products to be considered for provision through the Low Vision Scheme.

The manufacturers/suppliers of these products have now been contacted by an NHS agent acting on behalf of the Low Vision Service, and have been invited to participate in a competitive tendering process. As a result, some or all of these products will be provided free of charge to children with sight problems across Wales, for use at **home.** We anticipate that the positive outcomes of the project will be realised within the next six to nine months.

Acknowledgements

Wales Council for the Blind would like to thank everyone who took the time to participate in and support this project. We would like firstly to thank all of the suppliers and manufacturers of electronic pocket magnifiers who were involved and kindly loaned us their products for the duration of the project. Secondly, we would like to thank all of the Specialist Teachers for the Visually Impaired and Special Educational Needs Co-ordinators, who were instrumental in arranging and coordinating focus groups across Wales. Thirdly, we would like to say a huge thank you to the children, who took time out of their school day to review the products and without whom we would not have been able to produce this report. Their feedback was invaluable and forms the backbone of our recommendations.

In addition, WCB wish to say a special thank you to the Cambrian Educational Trust who provided the majority of the funding towards this project.

1. Background

At Wales Council for the Blind, access to information is one of our most important priorities. It has been estimated that 80% of school tasks are based on vision[3], which indicates the enormous difficulties experienced by visually impaired children as they progress through school and beyond. “It is therefore imperative that appropriate levels of intervention and support are available to all visually impaired children and young people.”[4]

Visually impaired children and young people across Wales have access to The Low Vision Scheme which provides low vision aids, free of charge. There are 170 accredited high street optometrists and dispensing opticians located across Wales who offer low vision aid assessments free of charge. Under the scheme currently, only low tech low vision aids (such as optical magnifiers) are available. There is a growing concern that children and young people are not using their optical magnifiers, mainly because of their distasteful designs and limited magnification capabilities.

For a number of years Wales Council for the Blind has wanted to see high tech low vision aids, such as electronic magnifiers, included within the range of products available through the Low Vision Scheme. The Welsh Assembly Government now agrees and has subsequently promised to include portable hand held electronic magnifiers on the list of products available to children to use at home.

What is an electronic pocket size magnifier?

An electronic pocket size magnifier is a device powered by battery, which is used to display enlarged images on an integrated screen. They are often referred to as “pocket size” because they are small, portable and more discreet and socially acceptable than some other types of low vision aids. There are several different types of electronic pocket size magnifiers, which allow the user to alter colour contrast levels as well as achieve good quality, high levels of magnification.

High tech low vision aids, such as electronic magnifiers, are capable of achieving magnification ranges which far exceed those of optical aids. They are also far more stylish and modern looking and host other features, including freeze frame options and various colour contrast modes. By making products such as these available free of charge, we are confident

[3] Manson, H L “Visual Impairment” (NASEN publication 1995)
[4] Department for Training and Education: “Educational Services for Visually Impaired Children and Young People” Consultation Document (Welsh Assembly Government publication, 28th May 2004)

that visually impaired children across Wales will be far more willing to make use of them.

Consequently, Wales Council for the Blind was funded, partly by the Welsh Assembly Government, but mainly by the Cambrian Trust, to independently review the range of electronic pocket size magnifiers available, with visually impaired children across Wales.

By giving the children the opportunity to select the magnifier/s which they most wanted to see provided, we are convinced that they will be confident about using them. The feedback given by the children will allow us to produce a ranked list of electronic magnifiers, some or all of which will then be placed on an accredited list and provided to children across Wales, free of charge, through the Low Vision Scheme.

Although this is initially a pilot scheme aimed specifically at children, we would hope that, in the future, this will be extended to include adults. In addition, we acknowledge the fact that this project provides assistance to those with some useful sight. It is important that the visual impairment sector offers and ensures equal provision and accessibility to those who have no useful vision. We would hope that as a result of this work, the same level of provision is available to those with no useful vision. We would also like to conduct further independent reviews in relation to other ranges of products, such as screen magnifiers/readers.

2. Aims of the project

- **i.** To select 4 or 5 magnifiers which will be invited to tender, with a view to being provided free of charge to children with sight problems across Wales to use at home, through the Low Vision Scheme.
- **ii.** To independently review the range of electronic pocket size magnifiers available.
- **iii.** To raise awareness of this range of products.
- **iv.** To make links with Special Educational Needs Advisors and Qualified Teachers of the Visually Impaired across Wales.
- **v.** To learn about what visually impaired children across Wales think of electronic pocket size magnifiers and low vision aids generally.

3. Methodology

The project comprised three stages:

Stage One

Initially, WCB reviewed all of the electronic pocket sized magnifiers available on the market. Working within the specifications of the Welsh Assembly Government's requirements, we selected a number of products that could be included in the review. Others in the voluntary sector were then contacted to ensure that they felt that the list was comprehensive.

The list of products to be reviewed was then finalised and each manufacturer agreed to loan their products to Wales Council for the Blind for the duration of the project.

On delivery of the magnifiers, an initial review was carried out by the Information Communication Technology (ICT) Network for Wales. The products were given a rating in relation to the following categories:

- Clarity of image
- Reading glossy paper
- Reading matt paper
- Writing
- Usability
- Durability
- Appearance/design

For each category the product was given a performance rating of:

1. Poor
2. Satisfactory
3. Good

The products which received the best scorings would proceed to Stage Two of the project. The products that performed poorly would be eliminated.

Stage Two

During Stage Two the products were taken to 11 focus groups across Wales and reviewed by 31 visually impaired children. The children were

given a series of exercises to complete using the magnifiers, each sheet having been carefully designed to demonstrate different aspects / functions of each product.

They were then asked to discuss which magnifier they liked the best and the reasons for their choice. A questionnaire was given out to each child who participated **(see appendix 1).** This was completed at the end of the session and asked more specific questions in relation to the magnifiers.

When the eleven focus groups were completed, the feedback was collated and reviewed. The products which consistently received negative feedback were eliminated and would not proceed to Stage Three.

By further reducing the product list it meant that in the final stage of the project, the children had a much reduced number of magnifiers to review. By reducing the quantity at this stage, the final group of reviews were more concentrated, enabling the children to give more detailed and focused feedback in relation to the remaining products.

Stage Three

During the final stage of the project, the products were taken to another 7 focus groups and reviewed by a further 13 children. The groups followed the same structure as those undertaken during Stage Two.

After focus groups in Stage 2 and 3 were completed, a table was produced which showed each child’s favourite product.

The 4 or 5 products which were the most popular were selected by WCB as the preferred models to be provided to children through the Low Vision Scheme.

The tendering process

After the product recommendations have been put forward by Wales Council for the Blind, the manufacturers/suppliers of such products will be contacted by an NHS agent, acting on behalf of the Welsh Low Vision Service, and invited to take part in a competitive tendering process.

Depending upon the outcome of the tendering process, some or all of the magnifiers recommended by Wales Council for the Blind will be provided to visually impaired children free of charge, through the Low Vision Scheme.

4. Reading with confidence: the report

4.1 Stage One: Defining the initial product list

The products that were to be considered for this process had to be:

- ✓ Electronic
- ✓ Truly portable: thus those linked to television screens, laptops or monitors could not be included.
- ✓ Pocket size
- ✓ Upper price limit of £600 unless product has extra features impressive enough to warrant consideration of magnifier which exceeds this cost.

With these specifications in mind, WCB undertook indepth market research as to which products could be included within the realms of the project. We were keen at this early stage to include as many devices as possible. The review was entirely independent and each manufacturer/supplier of the products that could be included was considered.

At this initial stage there were fourteen products which appeared on the product list. These included:

	Product	**Price**	**Supplier/s**
1.	The iLook	£110.00	Pamtrad Customs Ltd Jarik Staffs
2.	The SmartView Nano	£125.00	HumanWare
3.	The SmartView Pocket	£350.00	HumanWare
4.	The Looky	£420.00	Pamtrad Customs Ltd
5.	The SenseView P430	£425.00	Resold by RNIB
6.	The Opal	£445.00	Sight and Sound Technology
7.	The Quicklook	£445.00	VisualEyes
8.	The Pico	£449.00	Telesensory Europe
9.	The Nemo	£480.00	Enhanced Vision
10.	The Compact+	£495.00	Optelec
11.	The Quicklook Zoom	£545.00	VisualEyes
12.	The Quicklook Focus	£695.00	VisualEyes
13.	The SenseView Duo	£750.00	Resold by RNIB
14.	The FarView (NEW)	£1,100.00	Optelec

Prices as of March 2009. See websites for current prices.

4.1.1 The Opal: Excluded

Sight and Sound Technology withdrew the Opal from the project and subsequently no longer supply it.

4.1.2 The FarView (NEW): Excluded

*To see a full product description of the FarView, please see **appendix 2.***

Reasons for exclusion

Although we would have been very keen to review the FarView, it could not be included due to the following reasons:

This is a new product which is not due to be released until April, by which time the project would have been concluded.
The price of the FarView is £1,100.00. This means that it is too expensive to be considered for the Low Vision Scheme.

Despite this, the FarView is an exciting and innovative addition to the current range of electronic pocket sized magnifiers. As such, we would hope that it could be considered when conducting reviews in the future.

4.1.3 The Quicklook: Excluded

*To see a full product description of the Quicklook, please see **appendix 3.***

After speaking with VisualEyes it was decided that the Quicklook would be excluded at this point, the reason being that there were currently three versions of the Quicklook on the list. In essence, the Quicklook Zoom and the Focus host all of the original features of the Quicklook; but have other features in addition. Therefore, the Quicklook Zoom and the Quicklook Focus would be the models to progress to Stage 2 of the project.

Having excluded the Opal, the FarView and the Quicklook, 11 products now appeared on the product list.

4.1.4 Mail out to visually impaired voluntary organisations

Once the list had been finalised, five voluntary organisations across Wales: Cardiff Institute for the Blind, North Wales Society for the Blind, Vision Support, Gwent Association for the Blind and RNIB Cymru, were contacted and asked to confirm that they felt the list was comprehensive. Andrew Hillier and Sharon Beckett from Gwent Association for the Blind were amongst those who replied. They confirmed that they had no additions to the list.

4.1.5 ICT Wales Network Review of Electronic Pocket Magnifiers

There are currently 11 products on the list to be reviewed by children at focus groups. This number is too large and will affect the quality of the feedback we receive. The fact that these products are to be reviewed by children (some as young as six years of age) means that we need to reduce the number of products on the list.

The ICT Wales Network meeting provided a fantastic opportunity for professionals within the field to give their opinions on which products should go through to Stage 2 of the project and which should be eliminated.

Process of assessing each product

The products were rated in accordance with the assessment criteria discussed in the methodology.

Objective

The review provided an opportunity for professionals to reduce the number of products to be reviewed by children with sight problems at focus groups.

Results

This is the order in which the products were ranked, starting with the highest performing magnifier.

1. Quicklook Zoom
2. Quicklook Focus
3. Compact+
4. SenseView P430
5. Looky
6. SmartView Pocket
7. Nemo
8. Pico
9. iLook
10. SmartView Nano
11. SenseView Duo

The list shows the amalgamated results of everyone who assessed the products.

The Quicklook Zoom had the best results. It scored maximum marks in relation to clarity of image and ability to read on matt paper.

4.1.6 Lighting

The review highlighted the importance of correct lighting while using these products. The correct use of lighting is just as important as using the correct low vision aid. The lighting meant that when reading glossy paper, there was a lot of glare and reflection. All products performed worse on glossy paper than on matt. Glare can be reduced by altering the lighting. A task lamp provides healthy and relaxing light conditions, which reduces the strain on the eyes and enhances vision. It increases clarity and contrast, while at the same time reducing glare.

Products eliminated from phase two of the project

4.1.7 SenseView Duo Eliminated

To read a product description of the SenseView Duo, please see ***appendix 4.***

Feedback

Feedback from the ICT Network meeting indicated that the Duo is complex to use. It was the lowest scoring product in relation to clarity of image, usability, durability and design.

It was felt that the controls on the Duo are difficult to use. It is not obvious which controls perform which functions. The complexity of the device means that children would struggle to operate it.

Also, the Duo is the most expensive product on the list and sits outside the £600 limit of the project.

Therefore, due to poor performance in the ICT Wales Network review, the SenseView Duo has been eliminated from the project.

4.1.8 Exclusion of the Quicklook Focus

To read a product description of the Quicklook Focus, please see ***appendix 5.***

Feedback

The Quicklook Focus performed highly in the review. However, the ICT Network felt that the auto focus would not be of benefit to children. The need to constantly re focus the image could prove problematic.

Also, the Quicklook Focus exceeds the price range specified by the Welsh Assembly Government.

The Quicklook Zoom will be included in the project. This is a more suitable product for use by children because it does not require the child to constantly re focus the image. It also falls within the allocated price range.

Therefore, due to the reasons above, the Quicklook Focus has been eliminated from the project.

4.1.9 i-look and SmartView Nano

These products are identical. The only difference between them is that the

i-look is white and the Nano is black.

These products are substantially different to the other products on the list. Feedback suggested that they are too different to be compared to the other electronic magnifiers on the product list. It has been decided that these products should be shown at the end of each focus group, separately to the other products. The children will be asked if they would like a product such as this and if they think it would be useful.

Both products will go through to the next stage of the project.

4.1.10 Comments in relation to other products

The Pico was the lowest scoring product in relation to its appearance/design and durability. The ICT Network was very concerned about the legs on the Pico because there are fears that they would be easily broken. One member of the ICT Network indicated that he has a packet of spare legs for the Pico which he uses to replace the broken ones. This could be dangerous in relation to children.

The Nemo scored lowest in relation to portability. All members of the review felt that the Nemo was a heavy product, making it more difficult to read with. The weight of the product makes it more difficult to manoeuvre the magnifier around the page, a movement commonly referred to as “tracking”.

There are concerns in relation to the durability of the Compact+. The battery pack at the back easily slides off. This is a concern when considering use by children.

The silver rim around the screen of the SmartView Pocket was causing glare from the lights above. It has been suggested that if this was changed so that it was black, the light would not reflect.

4.1.11 Products going through to the next stage of the project

SmartView Pocket
Compact+
Looky
Quicklook Zoom
SenseView P430
Pico
Nemo
Look
SmartView Nano

4.1.12 The SmartView Versa+: New Addition to Product List

Having been contacted by HumanWare I was made aware of a brand new electronic pocket sized magnifier. The Versa+ is HumanWare's latest hand held magnifier and has unique multimedia features. The Versa+ works primarily as a magnification aid but also allows the user to play music and watch films. It also has options to record and playback speech. The Versa+ was reviewed against the same assessment criteria as those used at the ICT Network review. The Versa+ scored highly and as such, proceeded to Stage Two of the project.

4.2 Stage Two: Product reviews at focus groups across Wales

The 10 products listed on the previous page were taken to 11 focus groups across Wales and reviewed by 31 visually impaired children. The children were given a series of exercises to complete using the magnifiers, each sheet having been carefully designed to demonstrate different aspects / functions of each product. They were then asked to discuss which magnifier they liked the best and the reasons for their choice. A questionnaire was given out to each child who participated. **(See appendix 1).** This was completed at the end of the session and asked more specific questions in relation to the magnifiers.

When the eleven focus groups were completed, the feedback was collated and reviewed. The products which received consistently negative feedback were then eliminated and would not proceed to Stage Three.

4.2.1 Exclusion of the SmartView Nano and the iLook

*To see a product description of the iLook and the SmartView Nano please see **appendix 6.***

Feedback

None of the children selected these as their favourite magnifier.
60% of the children chose this as their least favourite product.

Due to the fact that these products are so different to the other magnifiers on the review list, they were shown at the end of the 11 focus groups. The children were asked whether they thought that a small magnifier, designed specifically to read small pieces of information, would be beneficial to them.

The children very much liked the concept behind the Nano and the iLook. They felt that, in principle, it would be useful to have a small electronic magnifier fit for these purposes and found the products to be very light and portable. However, having attempted to use these products to look at train tickets, receipts and measurements on rulers, the children unanimously agreed that the Nano and the iLook did not provide a satisfactory quality of magnification.

Screen size

The size of the screen is very small in comparison to the other products. This caused problems because even when reading small pieces of information, such as train tickets, the children were only able to fit part of the word on the screen. This made the magnifier difficult to use.

Clarity of image

The reviews also revealed problems in relation to the clarity of the image. Many children referred to the image as “blurred”. This meant that the image on the screen was difficult to decipher.

Position of the camera

The camera is located to the side of the magnifier. This caused frequent problems at focus groups, with many children complaining of difficulties in relation to tracking. The children explained that if the camera was centralised, the products would be much easier to use.

Control settings

Feedback suggested that the control symbols were very inaccessible. The children found the products difficult to operate because the symbols on the device were very small. They also noted that the fact that the buttons on the Nano are black means they blend into the black background, making them difficult to distinguish.

Comparison to other magnifiers demonstrated

100% of the children stated that they would choose one of the other larger magnifiers rather than the iLook/Nano.

Specific responses

A 17 year old participant stated that:

> *"I like the idea but in school I move around to different classes. I would rather have one of the bigger magnifiers than a small one because it can do everything that the Nano does, and it does it better. This would be better than me having to carry two magnifiers with me."*

A Teacher of the Visually Impaired noted that:

> *"I don't see that these would be useful to the children. The screens are very small, making their use very limited."*

Suggested improvements

- Larger screen
- Centralised camera
- Larger control symbols
- Brightly coloured buttons
- Lower level of magnification

4.2.2 Exclusion of the Pico

*To see a product description of the Pico, please see **appendix 7.***

Feedback

None of the children selected the Pico as their favourite magnifier.
40% of the children selected the Pico as their least favourite magnifier.

Although the children liked the simplicity of the Pico, in that it only has two buttons and is therefore easy to operate, the magnifier received consistent negative feedback.

Appearance/design

95% of the children said that the Pico was their least favourite product in terms of its design. They felt that in comparison with the other magnifiers on the list, the Pico looked particularly old fashioned. The children commented that many of the magnifiers looked very stylish and are very similar in appearance to their games consoles. They believed that the Pico was a far less discreet product and disliked it because of this.

The children also disliked the size and weight of the Pico. They felt that it was one of the least portable magnifiers. They much preferred more slim-line, lightweight magnifiers such as the SmartView Pocket, which fits easily into the pocket.

In particular, the younger children struggled with the Pico because of its size and weight. The lack of a handle meant that younger children with small hands and fingers found it very difficult to move the magnifier around the page. They much preferred lighter magnifiers with handles as these are easier to grip and place less strain on the wrist.

Clarity of image

Many children complained that the image was blurry, especially when viewing objects / text at the higher levels of magnification. They felt that in comparison to the other magnifiers, the Pico had the poorest quality of image.

Magnification range

The most common complaint in relation to the Pico was the lack of a button to alter the magnification level. The magnification levels are altered by

changing the position of the Pico's legs. The children preferred to use buttons to scroll through the range of magnification levels.

The participants also commented that even at the lowest level of magnification, the text was too large. They said that the Pico could benefit from a lower level of magnification, enabling more information to fit on the screen at any given time.

Position of camera

Many children struggled with the fact that the camera is not in a centralised position. Although they felt that the camera was not as far off centre as those such as the Quicklook Zoom, they still found tracking problematic.

Specific responses

One child of eight years old commented:

> *"I think this (the Pico) is really hard to use because it is too bulky and I can't hold it very easily. I like the others better. The others look better than this one."*

A Qualified Teacher of the Visually Impaired stated that:

> *"I think that the children in general would be much happier using one of the other magnifiers, especially in front of their peers. In comparison to the others, the Pico looks very old fashioned and lacks in quality."*

Suggested improvements

- Lower level of magnification
- Alter design: make it more stylish / modern looking and change colour to black rather than silver and blue.
- Centralised camera.
- Button to flick through different magnification levels.

4.2.3 Exclusion of the Nemo

*To view a product description of the Nemo, please see **appendix 8**.*

Feedback

None of the children selected the Nemo as their favourite magnifier.

Despite the fact that the Nemo will not proceed to Stage Three of the project, it is interesting to notice that this magnifier received positive feedback in the main. It was simply the size and the weight of the product which prevented the children from choosing it as a favourite.

Feedback suggests that the Nemo is a very functional product. It is easy to use and the controls are clearly marked out and distinguishable. The children thought that the quality of the image was good and 79% thought that the Nemo was the simplest and most straight forward magnifier to operate.

One feature that was extremely popular was the “dial” type switch used to navigate through the different modes and magnification levels. Many children commented on this kind of switch and thought that it was particularly quick and easy to use. The majority of the children preferred this to the equivalent switches featured on other magnifiers.

Portability

The Nemo is the least portable of all of the magnifiers. It is the heaviest and the bulkiest product. The children explained that this was their main reason for preferring the other products. The children have to carry their magnifiers around with them and felt that the size and weight of the Nemo would make this difficult. They preferred other magnifiers which were far lighter and slimmer.

Camera position

Again, the children commented on the position of the camera. They found those magnifiers with centralised cameras far easier to track with.

Appearance / design

Many of the children felt that the Nemo could be improved by modernising its design. In comparison to many of the other more slim-line, shiny looking magnifiers, they thought that the Nemo looked dated. Children would be

happier and more confident using some of the other more modern-looking magnifiers, which look more like games consoles than magnification aids.

Use by younger children

The younger children struggled to use the Nemo. Although this product is arguably the most functional and easy to operate, in practical terms younger children struggled to use it properly. The size and weight of the product meant that younger children, with small hands and fingers, found the product heavy and difficult to hold, which made tracking problematic. The incorporation of a handle (similar to the Looky and the Compact+) would alleviate this difficulty by making the product easier to grip.

Specific responses

An eight year old child using the Nemo said that:

> *"It's really heavy and hurts my wrists. I like the ones with handles better."*

Another participant, a boy of 17, commented:

> *"This magnifier (the Nemo) is really easy to use. It's a shame that it is so heavy and bulky. I like it but it would be the most awkward to carry around. The size and weight make me not want to pick it as a favourite."*

Suggested improvements

- Centralised camera
- Reduced size and weight
- Modernised design

4.2.4 Results of Stage Two reviews

As a result of the reviews conducted as part of Stage Two of the project, the following products have been eliminated due to consistently poor performance:

- The iLook
- The SmartView Nano
- The Pico
- The Nemo

Consequently, the products proceeding to the final stage of the project are:

- SmartView Pocket
- Compact+
- Looky
- Quicklook Zoom
- SenseView P430
- SmartView Versa+

4.3 Stage Three: Intensive focus group reviews

During the final stage of the project the six magnifiers listed above were reviewed at a further seven focus groups across Wales. These focus groups looked more intensively at the reduced number of products. The four or five products which received the most positive feedback at the end of Stage Three would be selected by Wales Council for the Blind as those which should compete to tender for provision for children through the Low Vision Scheme.

4.3.1 The Quicklook Zoom

To view a product description of the Quicklook Zoom, please see ***appendix 9.***

Feedback

None of the 44 children who participated in the project selected the Quicklook Zoom as their favourite product.

The Quicklook Zoom scored the highest during the initial ICT Wales review. It received maximum marks in relation to the clarity of its image and its ability to read on matt paper. However, when reviewed by visually impaired children across Wales, other products were preferred.

Clarity of image

All of the children at focus groups agreed that the Quicklook Zoom boasts an impressively crisp and clear image. 92% of participants thought that the Zoom was the highest performing magnifier in terms of the quality of its image.

They also liked the large intergrated screen as it allowed them to maximise the amount of information that they could fit on the screen at any one time.

Magnification range

The participants felt that the range of magnification levels available were sufficient to meet their needs. They were impressed by the range available and did not think that it needed adjusting.

Durability

Its rubber-like texture means that the Quicklook Zoom is the most durable of all of the products. Durability is particularly important in relation to children. It is vital that the electronic magnifiers eventually supplied free of charge can withstand the inevitable wear and tear they will be exposed to.

Design

The children liked the appearance of the Quicklook Zoom. They thought it looked stylish and modern and many participants thought that it resembled their PsP games console. They said that the modern look of the product would encourage them to use the Quicklook Zoom with confidence in front of their peers.

Ability to handwrite under the product

97% of the children thought that the Quicklook Zoom was the easiest product to handwrite under. Its moveable camera lens makes it easy to get a pen underneath the lens, while its impressively crisp image makes handwriting clear to see.

Despite this, none of the children who participated in the reviews use their magnifier in this way. Conversely, they only use their magnifiers to enlarge and look at text and objects.

Many participants also commented on the fact that although the Quicklook Zoom is the best product to assist in handwriting, realistically one could only handwrite comfortably for short periods of time. This means that while

this product would be useful for form filling / filling in cheques etc, it could not be used for lengthy pieces of handwritten work.

Usability - position of camera

It was the usability of the Quicklook Zoom that deterred the children from selecting it as a favourite.

The children found the position of the camera incredibly problematic. The fact that the camera is so far from a centralised position meant that the youngsters found it disorientating and very difficult to track with.

Both the younger and the older participants commented on the problems caused by the position of the camera. Many of the children felt this was a shame because the Quicklook Zoom scored so well in relation to other assessment criteria such as clarity of image, design and durability. Despite this, the children felt that the problems caused by the position of the camera were great enough to deter them from selecting the Quicklook Zoom.

Difficult to handle

The participants found the Quicklook Zoom difficult to handle, particularly the younger children whose smaller hands and fingers struggled to hold and move the bulky magnifier around the page. The lack of a handle meant that the children had no option but to hold the magnifier in this way. The children therefore preferred other smaller products, which made it easier to navigate around the page.

Lack of versatility

The participants noted that the Quicklook Zoom can only be used flat on the surface. They preferred other products which offered features such as stands and handles as these were more versatile.

Specific responses

One participant of 17 stated:

> *"This (the Quicklook Zoom) looks very similar to my PsP. I really like the design of it and the image is really clear. It has got a really good range of magnification on it but I'd find it really hard to use because the camera is so far to the side. It's the hardest to use."*

Another participant of nine years old said:

> *"It's quite big and hard for me to hold. It would be better if it had a handle on it so that I could hold it more easily."*

A child of thirteen commented:

> *"It's really hard to put the magnifier in the right place on the page. I point it at a word but it doesn't show me that word on the screen. It's really difficult to find my place."*

One participant in Anglesey said that he already uses an old version of the Quicklook in school. He finds the position of the camera quite problematic. He had never seen products that have centralised cameras and in comparison, felt that they were far easier to use.

Suggested improvements

- Centralised camera
- Made more easily accessible to younger children who find the product awkward to handle

4.3.2 Exclusion of the Quicklook Zoom

Due to the fact that the Quicklook Zoom was not selected by any of the 44 children as being their favourite magnifier, it will be removed from the project and as such, will not be considered for the Low Vision Scheme at this time.

We do however rate the Quicklook Zoom as a very useful magnification device and think that if, in the future, the Low Vision Scheme considers providing electronic magnifiers for adults, then this product should be reconsidered. The problems relating to usability are likely to be child-specific i.e. difficulties younger children experienced when holding and moving the magnifier. The Quicklook Zoom was the highest scoring product when assessed by adults at the ICT Wales Network review in January. This may indicate that the Quicklook Zoom performs better if the user is older.

4.3.3 The SmartView Versa+

Product description

Information taken from the HumanWare website: www.humanware.com

The SmartView Versa+ redefines the handheld electronic magnifier by combining a high performance electronic magnifier with multimedia features. Starting with a 4.3 inch colour LCD display, magnification up to 15X, and multiple high contrast modes, the Versa+ adds the ability to save and manipulate images, record conversations, listen to music and watch videos.

Features

- Auto focus - have a clear view up to 10cm away from objects
- Large screen - See more with a 4.3in (109mm) widescreen LCD
- High contrast viewing modes - see text in:

White	Black	Yellow	Yellow	Colour

- Save multiple images – pan and zoom saved images on a removable SD memory card.
- Lightweight – easy to carry and hold (7 oz, 200 grams)
- Multimedia support - listen to music, make recordings, view movies
- TV connectivity - connect to a TV for increased magnification

Feedback

52% of the children who reviewed the products selected the Versa+ as their favourite magnifier.

The SmartView Versa+ received the most positive feedback overall. Its unique additional features, which include the ability to watch films, play music, voice-record and playback as well as magnify, set it apart from all of the other products under review.

Appearance / design

The children very much liked the design of the Versa+. They felt that it was very stylish and looked similar to their games consoles. For this reason they said that they would feel confident about using the product in front of their peers.

The children particularly liked the Versa+'s handle. This makes the product versatile as it means that it can be used either flat on the surface or away from the surface. The handle also helps because it enables younger children with smaller hands to navigate and manoeuvre the magnifier more easily around the page.

A further advantage of the Versa+'s handle is that it can be used to view things such as bus timetables. A boy from North Wales said that he would use the handle and the Versa+'s freeze frame function to read bus time tables. Currently he is unable to do this and relies on his parents or friends to relay this information to him. The participant explained that his current optical low vision aid does not magnify greatly enough to achieve this but also, he does not feel comfortable using an optical aid in this way at a public bus stop as he feels it draws negative attention to him.

The participant was impressed by the modern design and the range of magnification achievable with the Versa+ and felt that a product like this would greatly enhance his independent living skills.

Although the on/off switch is easily distinguishable due to its bright orange colour, a consistent problem at focus groups was the ability to operate the switch. The majority of the youngsters found the switch very awkward and I relayed this comment to the manufacturers. Consequently, HumanWare have altered the switch and it is now much easier to operate.

The Versa+ comes with a silver case. This was well received at focus groups. All of the other products come with black cases but feedback suggested that the Versa+'s case was the most practical. Its eye catching silver colour means that it is easily distinguishable in the user's bag. The children explained that this would make it much easier to locate.

Clarity of image

The Versa+ displays a high quality image on its screen. The participants at focus groups felt that the image was clear and crisp. It also performed better than all of the other products when used away from the surface of the page. Even when used in this manner, the image remained clear.

Additional Features

It is the Versa+'s additional features which set it apart from all of the other magnifiers.

I demonstrated the Versa+ at the end of each focus group to ensure that the children did not choose this as their favourite simply because of its multimedia functions. Although the functions are impressive, the review was intended to evaluate the usefulness of these products as magnifiers first and foremost. Once the strengths and weaknesses of the products as magnifiers had been discussed, we then went on to consider any additional functionality.

The children felt that the additional features of the Versa+ transformed their magnifier from being simply a low vision aid, to an almost ipod-styled gadget. They said that because the Versa+ can be used to watch movies and play films, they would feel much happier about using it in front of their friends, as they would be impressed by these features.

Furthermore, the participants felt that the additional features make carrying their magnifier around with them and using it in front of strangers more appealing. Many children usually shy away from using their low vision aids, especially on public transport, as they do not want to draw attention to themselves. However, the majority of the children who reviewed the Versa+ stated that they would feel happy using it on public transport to read newspapers/magazines etc.

Due to the fact that the Versa+ also operates as a music player/film player it means that other people on the bus/train would not necessarily know that the child was using it as a magnification tool. In this respect, the children

were excited about the discretion that the Versa+ offers. The children felt that a magnifier offering additional features vastly improves the social acceptability of low vision aids.

Interestingly, participants felt that another benefit of the Versa+'s additional features was that they would be more likely to remember to carry it with them. They also noted that because the Versa+ plays music and films, they would have less to carry in their bags, reducing the occasions when they take their ipod or portable DVD player out with them and leave their low vision aid at home.

One point that was made numerous times by both Qualified Teachers of the Visually Impaired and the children themselves was that the Versa+ may not be the most appropriate electronic magnifier for use within education.

The temptation in class to activate the other features, such as the music player, may prove difficult to resist and could get children into trouble. Teachers would find this hard to control and regulate, as other members of the class are forbidden from having their ipods/music players out during lessons.

In terms of this project, which aims to provide electronic magnifiers for use **at home**, this will not be a problem but it is important to bear this in mind if reviews are conducted in the future which consider provision within education.

Feedback from focus groups suggested that purely as a magnification tool, the SmartView Pocket was the preferred choice but, taking the additional features of the Versa+ into account, participants felt that this drastically improved the social acceptability of the product and therefore they would be more willing to use it.

Specific responses

A 16 year old participant from Llanedeyrn School in Cardiff stated:

> *"This magnifier is a really cool gadget. You can use it to play music and watch films. I would be much happier about using this than the one I've got now. My optical one looks really embarrassing but this looks similar to my PsP game. I think my friends would really like it too."*

Another child of 12 years old who reviewed the Versa+ at a focus group in North Wales said:

> *"I like the handle and the freeze frame because I could use it to read the bus timetable. My optical magnifier does not enlarge the print enough for me to be able to see it but even if it did, I wouldn't really feel good about using it at the bus stop because it doesn't look very good and people would stare at me. I would use this one (the Versa+) though. It looks really cool and enlarges the writing much more than the magnifier I've got at home. I think it looks brilliant."*

Suggested improvements

- On/off switch made easier to operate. HumanWare have taken this feedback on board and consequently altered the switch to make it easier to use.
- Handle made stronger. HumanWare have adapted the prototype so that the handle is stronger to use.

4.3.4 The SmartView Pocket

Product description

Information taken from the HumanWare website: www.humanware.com.

The SmartView Pocket is a lightweight and compact handheld video magnifier that helps you when things are too small to see and read. Supporting up to 9x magnification and containing powerful features found in products twice its size, the SmartView Pocket is still small enough to easily fit in your pocket or handbag.

Main features

Magnification

- 7 levels
- 3X to 9X

Display

- 3.6-inch (9.1-cm) colour TFT LCD
- Viewing modes: Full colour, gray scale, black/white, white/black

General

- Easy-to-use tactile controls
- Centralised camera
- Freeze picture
- S-Video output
- On-screen battery status indicator

Includes

- Video magnifier
- AC power supply
- RCA video cable
- Carrying strap
- Protective case

Dimensions and weight

- 115 (L) x 80 (W) x 20 mm (H) (4.5 x 3 x 0.8 inches)
- 140 grams (4.9 oz)

Feedback
18% of the children selected the SmartView Pocket as their favourite magnifier.

Although the SmartView Versa+ was the most popular product, the children agreed that, purely as a magnification tool, the SmartView Pocket was their preferred product.

Appearance / Design

The participants very much liked the design of the SmartView Pocket – in fact 96% of the children thought that this was the most stylish and modern-looking magnifier of all.

The participants found the built-in stand particularly useful. The SmartView Pocket is placed on a slant on its stand so that the screen is not flat on the surface of the page. This means that users do not have to lean over the magnifier to look at the screen and makes tracking much easier. A major benefit of this reading position is that it reduces the strain on the child's back. A common problem experienced by those who are visually impaired is that they suffer from bad posture and back/shoulder problems due to the fact that they often lean forwards to view things at a closer range. The SmartView Pocket is the only product which offers a solution whereby users do not have to lean over the magnifier. This is particularly relevant when considering use by children as their bodies are not yet fully developed. The benefit of the SmartView Pocket's reading angle is that it minimises the strain on the back and reduces the amount of damage caused in relation to posture when using low vision aids.

Another benefit of the Pocket's reading position is that it works well on a sloping desk. Almost a quarter of the 44 children use, or have used, sloping desks at some point in their lives.

Again, this reduces the need to lean as far over the table and aims to reduce damage to the back. The Pocket's reading stand means that it works well on these desks as it holds its position and does not slide down.

In addition, Andrew Jones, who is a Qualified Teacher for the Visually Impaired in Gwent, mentioned a further benefit of the SmartView Pocket's reading position. He noted that it would be useful within the classroom environment because its stand allows the teacher to stand behind the child and put the pen under the camera lens to direct the child to a particular word or question. A teacher would be unable to do this with other products

such as the Compact+ and the SmartView Versa+, which operate by placing them flat on the surface of the page.

Durability

97% of participants felt that the SmartView Pocket was the most durable of all the products. This was an opinion shared by those who reviewed the products at the ICT Wales meeting.

Portability

This was the highest-scoring product in relation to portability. The SmartView Pocket is the lightest of all of the products. It is relatively small and compact and its slim-line design means it can easily fit into a shirt pocket or handbag.

Usability

The SmartView Pocket scored highly in terms of usability.

The product has very large buttons which are clearly marked and very easy to see. The picture-style menu and option to have sound on (which allows you to hear yourself flicking through the modes) are all features which make navigating through the menu very easy.

The centralised position of the camera also makes this product easy to read with and eradicates the problems experienced by many children when trying to use magnifiers that have disorientating camera positions. This was another feature that children particularly liked and found useful.

Lighting

The SmartView Pocket offers seven different levels of brightness. This range is useful, especially for children who are light sensitive or photophobic. It means that the level of light can be adapted to make reading as comfortable as possible for the user.

Interestingly, the Pocket also supports external lighting. Some rooms within a house are always brighter than others. The Pocket allows the user to adapt the lighting to ensure the best viewing capabilities in different environments.

Range of magnification levels

The SmartView Pocket boasts a wide range of magnification levels – from 3X to 9X depending on the user's needs. Children at focus groups were impressed by the magnification capabilities of this product and felt that they adequately catered for their needs.

Use for handwriting

The SmartView Pocket can only be used for reading. However, none of the children were deterred by the product's inability to assist with handwriting because they do not use their magnifiers for this purpose.

Glare / reflection of light

Although the SmartView Pocket performed extremely well throughout the review, it is important to note that this product is greatly affected by light. Both at the initial ICT Wales Network review and on several occasions at focus groups, participants complained of glare. This is particularly evident when reading glossy paper. These problems can be reduced by using a task lamp to provide a more natural level of light.

Focus groups also indicated that many children using the magnifier when sitting directly in front of a window experienced problems in relation to glare. This can be reduced by facing away from the incoming light.

The ICT Wales Network review also noted that the silver rim around the edge of the product was causing the overhead lights to reflect into the eyes of the participants. This feedback was relayed to HumanWare, with the suggestion that altering the colour of the rim to black rather than silver, would eradicate this.

TV Connectivity

Many of the children were impressed by the fact that the SmartView Pocket can be plugged into a TV screen. They liked the versatility that this offers and many said that this feature would be very useful at home. They talked about the fact that reading books or looking at maps would be much easier on a larger screen and liked the opportunity to view enlarged material in this way.

Use by younger children

Although the product scored very highly in relation to usability, it is important to note that this is a product which is more suitable for older children. The SmartView Pocket has a rather complicated menu in comparison with many of the other products.

It offers a vast array of magnification ranges and lighting options which are very useful, but which make the magnifier rather complex to use. Also, the reading stand has to be placed at precisely the correct angle to enable the user to achieve the clearest image.

This means that many of the younger children (5 to 10 year olds) struggled to use the SmartView Pocket. Therefore, the SmartView Pocket is a very popular and extremely effective device but should be given to slightly older children. For younger children, products such as the Looky and the Compact+ offer a more simple and effective solution.

Specific responses

A 13 year old girl from Bridgend commented that:

> *"It's (the SmartView Pocket) a really good magnifier. It's really light, much lighter than the others. It would be the easiest to carry around and it looks really good."*

Another participant who was 6 years old said:

> *"I can't see anything on the screen"*

because she could not focus the magnifier or navigate the menu.

Suggested improvements

- Longer handle
- Silver rim around screen changed to black
- Reduced glare

4.3.5 Compact+

Product description

Information taken from the Optelec website : www.optelec.co.uk

The Compact+, winner of an Independent Living Design Award, is a pocket-size video magnifier designed for the benefit of low vision people. Simply place it on a newspaper or magazine, and the magnified image is displayed on the integrated screen.

Superior image quality

The Compact+ offers a bright and sharp image quality. A full colour, 4.3 inch wide screen offers up to 10x variable magnification, in a wide range of high-contrast viewing modes including semi-colours.

Intelligent design for effortless reading and writing

With the camera located at the centre of the Compact+, positioning over reading material is so easy. With the added benefit of a collapsible handgrip, the Compact+ can also be used in the same way as a traditional handheld magnifier.

When out and about shopping, the useful snapshot facility can be used to capture images such as the price displayed on a supermarket shelf. Simply place the Compact+ over the object, press the snapshot button and the captured image can be viewed immediately. This makes reading easier in places that are sometimes difficult to reach.

Key benefits

- Variable magnification with up to 10x optical zoom
- View images and photographs in full colour
- Wide range of high contrast reading modes:
  Black text on a white background (positive)
  White text on a black background (negative)
  Yellow text on a black background
  Yellow text on a blue background
- Anti-reflective facility: view glossy magazines and mobile handset backlit screens more easily using any of the above mentioned viewing and reading modes
- Clear images displayed on the 4.3 inch high-contrast screen
- Rechargeable batteries allow 3 hours of continuous use
- Use standard AA batteries when recharging is not possible
- Writing facility using the adjustable camera position
- Collapsible handgrip for effortless reading
- Read and view objects more easily using the snapshot facility
- Carry case and wrist strap included

Technical specification:

- Dimensions: Width 13.5 cm, Depth 7.6 cm, Height 3 cm.
  Weight: 300g

Feedback

13% of participants selected the Compact+ as their favourite magnifier.

Appearance / design

The participants liked the design of the Compact+. They thought it was very stylish and modern looking. They very much liked the blue colour of the magnifier and thought that the on/off switch was easily distinguishable because of its bright orange colour. All of the children who reviewed the product said that they would be happy to use it in front of their peers.

The children also frequently commented on the usefulness of the handle. They enjoyed the versatility that this gave them when using the Compact+ because they did not necessarily have to use the magnifier flat on the page. This gave them more freedom and means that the product is useful for tasks such as reading bus timetables, as the handle makes it easy to

hold the magnifier up while the freeze frame allows a still image to be captured.

The sturdy handle also proved useful for younger children, many of whom struggled to use products like the SenseView P430 because their small hands couldn’t hold and move the magnifiers accurately around the page.

Despite the Compact+ being heavy in relation to many of the other products, the sturdy handle meant that even those as young as five found it very easy to use and even selected it as their favourite. At one focus group in North Wales, a five year old girl used the Compact+ to look at a book that she’d been reading earlier that day. Earlier in the morning, she had been unable to identify the object that the boy was holding, but was delighted to discover that she was able to see the object clearly when using the Compact+.

Usability

89% of the children who reviewed these products felt that the Compact+ was the simplest and easiest to use. Children of all ages found it very easy to work out how to operate the Compact+ and often did not require any guidance.

The product also scored highly in terms of its usability due to the centralised position of the camera. This enabled the participants to instantly pick up the product and read with ease.

Clarity of image

The Compact+ boasts a very clear and sharp high quality image. All of the participants were impressed, particularly by the quality of the image captured when using the freeze-frame option.

Many children also particularly liked the size of the screen, as it was amongst the largest of all the products under review.

Durability

There were some concerns in relation to the durability of the Compact+: 93% of the participant children thought that this product would be the easiest to damage. This was a concern that had also been raised at the initial ICT Wales Network review.

As this project will result in the provision of these devices for use by children, it is important that they can withstand a reasonable and inevitable amount of “wear and tear”. The Compact+ would benefit from an increased level of durability, perhaps developing a more rubber-like texture, which would make it more likely to withstand these pressures.

The battery pack on the back of the magnifier easily slides off, which could potentially be dangerous if a very young child were to remove it and put it near their mouth. Due to this, the Compact+ would benefit from ensuring that the battery pack is more secure.

Despite these concerns, it is important to note that throughout the 18 focus groups across Wales, no difficulties were experienced in relation to these issues.

Size and weight

Despite the fact that the Compact+ received extremely positive feedback overall, the one disadvantage which was mentioned on numerous occasions was the fact that the Compact+ is the heaviest of all of the products and is also one of the largest. Its size and weight means that it is less portable than some of the other products, in that it will not fit into a shirt pocket. Many of the children who selected other lighter products as their favourite said that in terms of quality they preferred the Compact+ but were inclined to opt for the lighter more slim-line magnifiers.

Specific responses

A five year old girl from Holyhead said:

> *“This is my favourite. It’s really easy to use and I can see things in my book I couldn’t see before.”*

An older participant, a boy of 17 commented:

> *“It’s a really good looking magnifier and I really like the colours. It’s a shame it’s not a bit lighter but the image is the clearest of them all so I’d still choose it as my favourite.”*

In relation to the durability of the product, a 13 year old boy from Cardiff said:

> *“I’d probably be more worried about it (the Compact+) breaking than I would about the other magnifiers.”*

Suggested improvements

- More durable (rubber texture)
- Lighter
- Available in different colours. Optelec already offers the Compact+ in different colours in the USA.

4.3.6 The SenseView P430

Product description

Information taken from the RNIB website: www.rnib.org.uk

The SenseView P430 is a slim, light and easily portable PDA style pocket video magnifier.

- wide 11.1cm (4.3") TFT-LCD type screen
- it is easy to use and has different magnification zoom levels, colour modes and an image capture feature
- nine magnification levels from 4 times (optical zoom) to maximum 28 times (digital zoom)
- four brightness levels and a viewed image capture facility
- six colour modes: full colour, black on white, white on black, yellow on blue, yellow on black, blue on white
- built-in rechargeable battery provides up to 4.5 hours of continuous use. An on-screen battery level indicator will show you when to recharge.
- power saving "sleep" mode
- supplied with mains charger, soft carry case and large print manual
- one year warranty

Dimensions
Height: 22mm (0.87"), Width: 78mm (3.07"), Length: 146mm (5.75"), Weight: 0.221Kg

Feedback

10% of the children selected the SenseView P430 as their favourite magnifier.

Clarity of image

The SenseView P430 boasts a very high quality image, in fact it scored third highest overall in relation to this. The children found the image displayed to be crisp and sharp and there were no reports of blur throughout all 18 focus groups.

Appearance / design

The participants were impressed by the SenseView P430's modern and stylish exterior. Many of the children likened the device to their games consoles and said that they would feel confident about using it in front of peers.

Lighting

The SenseView P430 offers four different light settings. This means that this magnifier is particularly useful for those who are light sensitive or photophobic, as they are able to alter the level of light according to their need.

Range of magnification

The SenseView offers nine magnification levels, from 4 times (optical zoom) to maximum 28 times (digital zoom). Feedback from focus groups suggested that there was a need for a lower level of magnification because many of the children were finding 4 times magnification too large, which made reading difficult at times.

Usability

Despite the SenseView receiving extremely positive feedback in relation to its design and the clarity of its image, changes could be made to improve its usability.

Many participants found that, initially, the product was very difficult to operate due to the fact that the control buttons and control symbols were so

small. Many children struggled greatly to see what the symbols illustrated and required assistance.

It is true to say that after a short while the child would learn the controls from memory but first time users find this device difficult to operate. Performance in relation to usability could be dramatically improved by using larger buttons and larger symbols on the control panel, making the product much more accessible to visually impaired people.

Many participants also struggled to locate the on/off switch and often needed it to be found for them. The on/off switch is difficult to locate because it is a silver colour and blends into the silver rim of the magnifier. The switch could be made much easier to distinguish if it was a bright colour and stood out from the rest of the rim.

There was also some concern in relation to the SenseView's legs. Many of the children noted that they were relatively difficult to unfold and they were concerned that if pulled too hard, the legs may snap. Despite the fact that none of the legs did actually snap off throughout the duration of the project, the strength of the legs could be improved to make them more secure.

Specific responses

One child of nine commented that:

> *"This magnifier looks the best. It looks quite like my PsP. It looks really cool and I think my friends would like it. I'd use it in front of my brothers and my friends and I wouldn't be embarrassed".*

An older boy of 16 noted that:

> *"Although it's really clear and the text looks really clear on the screen, I think they could definitely make it easier to use by making the symbols bigger. I can't see the symbols at all."*

A girl from North Wales said:

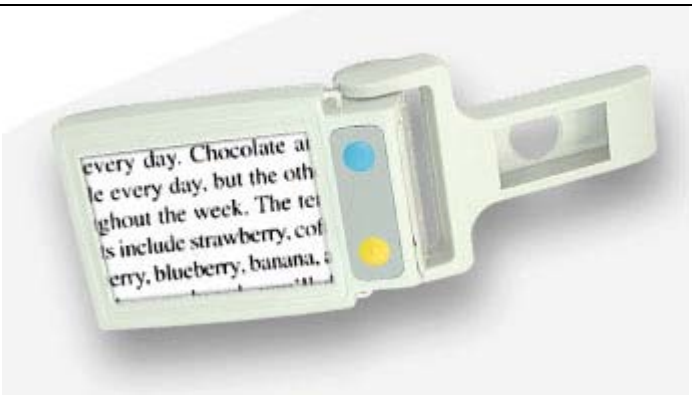
> *"I really like it and it helps me a lot but it would be good if sometimes, I could make the writing just a bit smaller because then I could look at more on the screen."*

Suggested improvements

- Lower level of magnification
- Larger buttons
- Larger symbols on the control panel
- Brightly coloured on/off switch making it easier to see
- Picture-style menu making it easier to navigate

4.3.7 The Looky

Product description
Information taken from the Pamtrad Customs Ltd website: www.pamtrad.co.uk



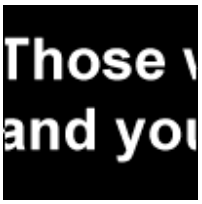
A small, electronic handheld magnifier weighing only 200 grams, the Looky is the lightest device of its kind. It is so handy that you can carry it easily in your breast pocket.

Always a clear view

With the Looky the picture is always sharp and you can read the text perfectly. You can see the text in colour, but also switch to black on white or white on black modes depending upon your preference.

True natural colour

Black on white



White on black

Folding handle

The Looky comes complete with an ergonomically designed folding handle. This is designed to enable the user to hold the Looky in a comfortable way. Alternatively, if the handle is not to your liking, just fold it away.

Special freeze function

The Looky is equipped with a freeze frame function. This enables the user to push a knob to freeze the text or picture on the LCD screen; it is as simple as taking a photograph. You can do this, for example, in the supermarket when you are not able to read the price of a product on the top shelf. You hold the Looky up in front of it, push on the knob and afterwards you can check the price with ease. You even have the possibility of switching between colour, black/white or white/black.

Batteries: easy to use

The Looky is provided with normal rechargeable batteries. As changing batteries can be often cumbersome, we have ensured that the batteries only fit the one way; you do not have to pay attention to the + and -. You will also receive a battery charger with the Looky, so you can charge the batteries in the Looky easily and quickly. After charging the batteries, you can use the Looky for up to one and a half hours continuously. For extended use, you can even use normal batteries.

Write-position

With the Looky it is easy to write your signature or make short notes. You can place the handle in a special position and look while you write.

Feedback

7% of the participant children selected the Looky as their favourite magnifier.

Portability

The Looky scored highly in relation to portability. All of the children liked the fact that this is a very lightweight, small magnifier which can easily and discreetly be carried around.

Usability

The Looky is arguably the easiest of all of the magnifiers to use. The fact that there are only two control buttons means that even the youngest participants found the Looky very easy to operate.

Many of the children commented on the usefulness of the handle, saying that this made the Looky very comfortable to use. Another benefit of the handle is the versatility it brings to the product. By using the handle, the user can easily scan a document by holding the magnifier away from the page. For this reason, children at focus groups said that the Looky was the best product to use whilst completing the word search exercise.

Clarity of image

The Looky produces a clear and sharp image. There were no complaints about glare or blurred images throughout the duration of the review.

Range of magnification

The Looky is one of only two magnifiers under review which does not provide a button to alter the level of magnification. Instead, the level of magnification is changed by moving the Looky further away from the page, thus reducing the size of the image on the display. Many participants felt that this somewhat limits its use in comparison with other products and suggested that the manufacturers alter the design of the product, to incorporate this feature.

Appearance / design

Of the five products remaining, the Looky scored lowest in relation to its design. Participants felt that the grey/white colour of the product made it look old fashioned and outdated. They much preferred the look of the other products, which resembled their games consoles and looked stylish. The majority of the children said that they would still use it in front of their peers, but would feel more self-conscious because of its outdated design.

The children also felt that the colour of the Looky means it is prone to getting dirty. They felt that this would worry them because of the expense of the product. The children suggested that if the manufacturers changed the colour of the Looky, making it black as opposed to grey/white, it would not only modernise its appearance but would also make it less likely to show up dirt.

Use by younger children

The Looky is particularly useful for younger children because it is very light and extremely simple to operate. The handle is of benefit to smaller children who often struggle to use more bulky products such as the SenseView P430. The handle allows smaller children to grip the product with ease and because it is lightweight it makes navigating around the page simpler.

Specific responses

A child of 11 years of age stated that:

> *"This magnifier (the Looky) is really easy to use and it is really light. It's the best for looking at the word search because the ones that you have to use flat on the page don't let you see much at once."*

Another participant of 14 commented:

> *"This looks older than the others. It is my least favourite to look at. I'd rather use one of the others in front of my friends because they look more modern. I wouldn't mind using it at home though."*

Suggested improvements

- Include a button allowing the user to alter the level of magnification.
- Include a wider range of colour contrasts.
- Change the colour from grey/white to black to modenise the product and keep it looking cleaner.

4.3.6 Products selected to be invited to tender

As a result of the reviews conducted across Wales, the following products have been selected and put forward to an NHS agent who will invite the manufacturers to participate in a competitive tendering process. Those products which are successful will be provided to visually impaired children across Wales to use at home, through the Low Vision Aid Scheme.

i. The SmartView Versa+
ii. The SmartView Pocket
iii. The Compact+
iv. The SenseView P430
v. The Looky

5. General conclusions

5.1 Centralised camera position

All of the products that have been successful and have been selected by us to tender for the Low Vision Scheme have centralised cameras. Throughout focus groups children commented that these devices were far easier to use. Participants found that products with cameras which were off centre were particularly difficult to use. Children found tracking problematic and often struggled to locate the object or image that they were trying to view.

5.2 Lighting

The review highlighted the importance of correct lighting while using electronic pocket magnifiers or, in fact, any form of low vision aid. Ensuring the correct lighting conditions is just as important as using the correct low vision aid.

All products performed worse on glossy paper than on matt due to the resultant glare and reflection from the paper. Glare can be reduced by altering the lighting. A task lamp provides healthy and relaxing light conditions, which reduces the strain on the eyes and enhances vision. It increases clarity and contrast, while at the same time reducing glare.

As well as controlling external lighting, many of the products under review offer a range of lighting levels on the device itself. The SmartView Pocket and the SenseView P430 offer the widest range of lighting options, which consequently makes them extremely useful to children who are light sensitive or photophobic.

5.3 Colour contrast modes

Manufacturers of electronic pocket size magnifiers are increasingly working hard to offer as many colour contrast modes as possible. Although undoubtedly this is useful for many users, it is interesting to note that 100% of the children who participated preferred to view text that was black on a white background. None of the children believed that they would use the magnifiers in alternative colour modes.

5.4 Handwriting

Many of the electronic pocket magnifiers enable the user to handwrite underneath the device. Interestingly, none of the children who participated in the project use their magnifiers for this purpose. All of the children explained that they would only use these products to assist reading.

5.5 Distance viewing

Children across Wales were highly impressed by the range of products they were shown. However, the electronic magnifiers that were reviewed cannot be used for distance viewing. On numerous occasions throughout the project, Qualified Teachers of the Visually Impaired and the children themselves emphasised a need for assistance in this way.

There are electronic magnifiers which offer this function, such as the FarView from Optelec, although these are more expensive and lay outside the specified price range of this project. However, it is important to note that there is a demand and specific need being advocated by children and young people across Wales for discreet assistive technology which assists distance viewing.

5.6 Importance of lower levels of magnification

Feedback from children across Wales has emphasised the importance of ensuring that lower, as well as higher, levels of magnification are attainable. Throughout the project, children complained that some products, even at the lowest level of magnification, were still enlarging the image too much. It is important that manufacturers recognise this need by ensuring that lower levels of enlargement are possible.

5.7 Raising awareness

An important aim of the project was to raise awareness about electronic pocket magnifiers, not just in terms of individual models but also as a range of products. When visiting children across Wales it became evident that many of them had not seen magnifiers such as these before. Many children had only ever seen and used optical magnifiers and were impressed by the stylish designs and special functions of electronic aids by comparison.

Some children had used electronic magnifiers within school, though these were older models of products such as the Quicklook. Many of the Qualified Teachers of the Visually Impaired and Special Educational Needs Coordinators were aware of some devices but said that they had not seen

the majority of them before. In this respect the project was a positive information-sharing experience, whereby professionals and visually impaired children and their families had a unique opportunity to try out not just one, but all of the electronic magnifiers currently on the market.

5.8 Warranty

WCB has recommended that the minimum warranty of any product selected to be provided to children through the Low Vision Scheme should be one year. However, WCB would like to see longer warranties and/or an option to extend a warranty at a minimal cost.

5.9 Insurance

Due to the fact that these products are expensive, it is important that they are covered by insurance once provided through the Low Vision Scheme.

The Low Vision Scheme will not provide insurance cover so it is important that the child's parent/guardian arranges this.

Any damage done within the family home should be automatically covered by the household insurance. The parent/guardian must check their policy to ensure that it covers them for accidental damage. Beyond this, the insurance policy can be extended to cover any damage done to the magnifier away from the home. This can be arranged by talking to the individual insurance company.

5.10 Lack of use of optical magnifiers

Feedback from children across Wales indicated that many youngsters are not making use of their optical magnifiers. 89% of participants indicated the reason being due to the distasteful designs of the products. Many children said that they feel self-conscious when using their aids in front of others as it draws attention to them. They were highly impressed with the stylish and contemporary designs of the electronic magnifiers in comparison and felt that manufacturers of optical aids should follow their lead by improving and modernising their designs.

Many children also explained that optical magnifiers are limited in terms of their magnification capabilities. Many children have optical aids that they would like to use to read the newspaper, for example, but often the magnification strength is not great enough to assist in this task. Participants felt that a major benefit of the electronic aids was the wide range of magnification levels available because they allow accessibility to a wider range of materials and information.

Optical aids are very important tools for those suffering from sight problems. There will always be a place for the optical low vision aid and we do not forsee electronic devices extinguishing their role. Optical aids will always have their uses, for example when the battery runs flat on an electronic aid. However, our research indicates that children across Wales are not using their optical magnifiers as much as they should be and it is therefore imperative that manufacturers work towards modernising their designs, to ensure that children are confident enough to use them in front of their peers.

5.11 Promoting independence

The provision of electronic magnifiers free of charge marks a fantastic opportunity to enhance and improve the independent living skills of visually impaired children and young people throughout Wales.

Many of the young people involved in the project talked about the fact that they will shortly be moving away to college or university. Many had practical concerns about this. For example, many young people explained that they were unable to read cooking instructions and bus time tables, even with their optical magnifiers. They felt that electronic magnifiers would resolve these problems and make independent living much easier.

Also, the provision of electronic magnifiers means that children and young people will be given a greater sense of choice and flexibility. Many parents explained that they struggle to obtain the reading books that their children desire, either because they cannot locate large print copies or simply because of the time it takes. Parents and children alike were therefore excited at the prospect of the electronic magnifiers being provided free of charge, as these problems would be eradicated and any standard print book would be immediately accessible by using discreet assistive technology.

The research project also indicated that many children rely heavily on QTVIs and SENCOs within school to provide work materials in enlarged print. However, when these children leave the security of the educational setting, and the support network they have, large print is not readily available. The provision of electronic pocket magnifiers will encourage children within school to rely less on large print and increase their confidence in relation to accessing materials in their post-educational lives.

6. Recommendations

As a result of the feedback gathered throughout the project, WCB have recommended that the five products invited to tender for the Low Vision Scheme should be:

i. The SmartView Versa+ from Humanware
ii. The SmartView Pocket from Humanware
iii. The Compact+ from Optelec
iv. The SenseView P430 which is resold by the RNIB and Microlink(PC) UK Ltd
v. The Looky which is supplied by Pamtrad Customs Ltd, Enabling Computers, Force Ten Co Ltd and Hagger UK Ltd.

As such, the suppliers listed above have been contacted by an NHS agent, acting on behalf of the Low Vision Service, and invited to take place in a competitive tendering process. The successful products will shortly be provided free of charge to visually impaired children across Wales, for use at home. We anticipate that these products should be available through the Low Vision Scheme within the next six to nine months.

7. Importance of keeping product list under review

WCB recognises the importance of keeping the accredited list of products under review. Technology is constantly progressing and new products are regularly released. Since the project began in December a further two new products have entered the market: the Pebble and the Mano. **(See appendix 10 and 11 for product descriptions).**

It is essential that visually impaired children have access to the best and most useful electronic magnification devices and by keeping the list under regular review, new products can be considered and commissioned.

8. Plans for future work

This project has identified a gap in the provision of assistive technologies for use by children **at home.** Many children with sight problems have access to a range of assistive technology within school but often do not have access to any such equipment at home. This means that homework is often difficult to complete and children are unable to read magazines/post or pursue other leisure activities and interests.

The One Wales strategy discusses the establishment in Wales of a right to learning and promises that the Welsh Assembly Government will ensure the best start for young children.[5] WCB believe that in order to achieve this, children with sight problems should be provided with a level of support at home which is consistent with that which they receive within education. WCB would therefore like to work in conjunction with SENCOs and Qualified Teachers of the Visually Impaired across Wales, to work towards a model where children have access to this level of support. This would mean that we would look to assess children for other ranges of assistive technology, such as screen magnification/readers, reading machines, Braille products, larger video magnifiers etc.

Furthermore, WCB realise that the electronic pocket size magnifier project provides assistance for children who have some useful vision. It is fundamentally important that the visual impairment sector does not isolate those with no useful sight. For this reason, WCB believe that these children should have access to an equal level of support, free of charge for use at home. This would mean assessing those with no useful sight and providing equipment such as Braille displays and screen readers. Equal levels of provision ensure that all visually impaired people have access to the same opportunities and enjoyment of life.

[5] One Wales Strategy. A progressive Agenda for Wales. 27th June 2007, Welsh Assembly Government document.

Appendix 1: Questionnaire completed by children at focus groups

Using an electronic pocket magnifier

Due to data protection issues, we do not require the names of children and young people completing this questionnaire.

1. Have you had a low vision aid assessment? Please circle your answer.

Yes **No**

2. Do you have an electronic pocket magnifier of your own? Please circle your answer.

Yes **No**

3. Of the magnifiers you have seen today, which one was your favourite?

_____

4. Why was this your favourite magnifier?

_____

_____

_____

_____

5. Tick the statement which best describes what you thought about your favourite magnifier.

o My favourite magnifier was good for reading but not for writing
o My favourite magnifier was good for writing but not for reading.
o My favourite magnifier was good for reading **and** writing.

6. Which magnifier was the best to read with?

_____

7. Which magnifier was the best for writing?

_____

8. Which magnifier did you most like the appearance of?

_____

9. Which was your least favourite magnifier?

_____

10. Why was this your least favourite magnifier?

_____

_____

_____

11. Here is a list of electronic pocket size magnifiers. Which feature do you think is the most important? Please number the features in order of importance, with 1 being the most important and 5 being the least important.

- o Clarity of image
- o Design
- o Size and weight
- o Number of colour contrasts
- o Ability to handwrite

12. List three hobbies that you enjoy.

Hobby 1:

_____

Hobby 2:

_____

Hobby 3:

_____

13. Would you use an electronic pocket magnifier to help you enjoy any of your hobbies? Please circle your answer.

Yes No

14. Would you feel comfortable using an electronic pocket magnifier in school? Please circle your answer.

Yes No

15. Would you like an electronic pocket size magnifier of your own? Please circle your answer.

Yes No

16. Tick the statement which best describes where you would use an an electronic pocket magnifier if you were given one.

- o It would be useful at home.
- o It would be useful in school
- o It would be useful at home **and** in school.

Appendix 2: The FARVIEW from Optelec product description

Taken from their website: www.optelec.co.uk

The FarView is a new intelligent video magnifier produced by Optelec, offering close-up and distance viewing capabilities, in a stylish and ultra-compact design. It is ideal for reading train time tables / airport flight boards or menu boards in a café.

The FarView eliminates the need to accurately track the camera across lines of text whilst reading. Simply point the camera towards any relevant information and capture and store images, which can be enlarged to read with ease.

The cursor controls allow scrolling through lines of text, which are displayed on the built-in 4.3-inch widescreen. Set the FarView to scroll at a comfortable reading speed across a line of text, and to return to the beginning of the line.

Alternatively, use the FarView as a live video magnifier to read information in real time. The clarity of images displayed on the FarView screen can be adjusted to improve brightness and contrast, whilst a range of popular semi-colours make text reading much easier.

Key benefits:

- Continuous zoom magnification
- Live View: up to 24 times
- Playback View: enlarge captured images up to 14 times
- 4.3-inch full colour TFT widescreen display
- Multiple viewing options
- Black text on a white background (positive mode)
- White text on a black background (negative mode)
- Blue text on a yellow background
- Yellow text on a blue background
- Yellow text on a black background
- Anti-reflective reading mode
- Use for reading and writing
- Camera is centrally positioned for intuitive reading
- Document and distance view capture – store, enlarge and review images
- Integrated memory for storing up to 100 images
- Rechargeable battery offering:
- Live View: up to 2.5 hours of continuous use
- Playback View: up to 4 hours of continuous use
- USB & VGA connections

Specification:

- Dimensions: 15.9 x 8.1 x 3.3 cm / 6.25 x 3.2 x 1.3 inches
- Weight: 290 grams / 10.2 ounces

Appendix 3: The Quicklook from Visualeyes product description

Taken from their website: www.visualeyesuk.com

The Quicklook is a hand-held, full colour, electronic magnifier with an integrated 4.3" wide aspect, hi-resolution, and colour TFT display.

Features

- Lightweight and portable - only 250g (8 oz).
- Built in monitor
- Comfortable to hold
- Enhanced contrast modes (black/white, white/black).
- Lights "OFF" feature for reading backlit displays e.g. mobile phones, microwaves etc.
- Signing cheques and making notes are all possible due to the movable camera.
  Current magnification x4.5 & x6.5.

Battery Life 4 - 7 hours depending on the user's display settings.

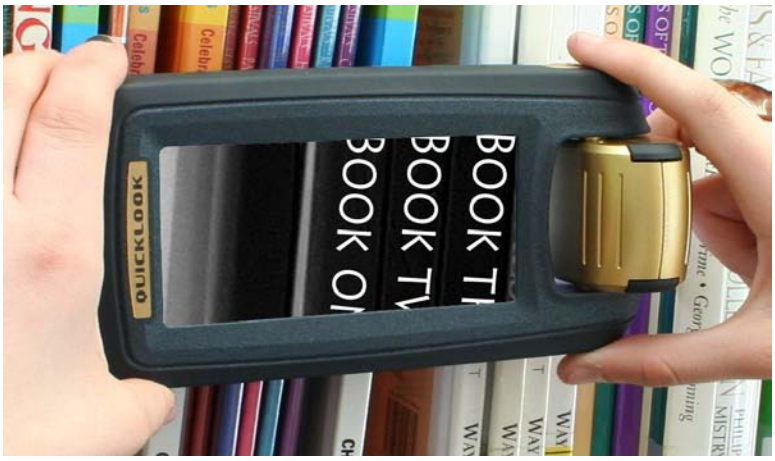
Appendix 4: The SenseView Duo product description

Resold by the RNIB and taken from their website: www.rnib.org.uk

This portable video magnifier has a 4.3 inch (10.9 cm) colour screen and has two cameras; one for close up viewing and another for distance viewing. The close up camera will help you to read price tags, timetables and newspapers. Whilst the distance camera will help with information that is further away like arrival boards at the airport, platform numbers at the train station and the number of the approaching bus.

- Close up camera has from 3 to 13 times magnification. This camera can rotate 45 degrees providing space for handwriting and signatures
- Distance camera has from 5 to 20 times magnification
- Two standard colour modes; full colour or monochrome. Five high contrast colour modes; black on white, white on black, yellow on black, yellow on blue and blue on white
- Panning control allows you to zoom in and scroll the text with a button rather than moving the magnifier
- Built-in rechargeable battery will provide up to four and a half hours use when fully charged. Recharge time approximately three hours when fully drained
- Image capture facility and storage of up to 20 images at a time
- LED lights help give a bright, clear image regardless of the surrounding light. They can also be turned off so you can look at glossy images without the reflection from the LED lights such as a photograph or magazine
- Supplied with protective case, mains charger and wrist strap
- Dimensions - Height: 22mm (0.87"), Width: 78mm (3.07"), Length: 146mm (5.75"), Weight: 0.221Kg

Appendix 5: Quicklook Focus from Visualeyes product description



Taken from their website: www.visualeyesuk.com

The Quicklook Focus is the latest addition to the Quicklook range of pocket electronic magnifiers. This magnifier boasts all of the features of the Quicklook and the Quicklook Zoom, but also has the ability to auto focus by pressing a button. Its unique Auto-Focus lens allows users to view more distant and less accessible items, such as those behind glass for example. The overview capability is also ideal for accessing touch-screen interface devices such as photocopiers.

Features

- True Auto-Focus - making overview and close-up viewing possible.
- Variable magnification x3 to x18 in 10 steps.
- Magnification of less that x3 is also possible using the overview feature.
- 4.3 inch wide aspect, hi-resolution, colour TFT display.
- Built in monitor
- Comfortable to hold
- Lightweight and portable - only 250g (8 oz).
- Freeze function - freezes information on the display.
- Easy to use on-screen display interface.
- Enhanced reading modes black/white, white/black, and semi-colours (56 colour combinations).
- Real sound feedback on controls.

- Lights "OFF" feature for reading backlit displays e.g. mobile phones, microwaves etc.
- Use it as you would use a magnifying glass.
- Can be orientated in any direction.
- Signing cheques and making notes are all possible due to the tiltable camera.

Benefits

All the benefits of the standard Quicklook and Quicklook Zoom but with True Auto-Focus - making overview and close-up possible; Increased magnification range as overview mode also allows magnification levels lower than x3 to be achieved.

Battery Life

4 - 7 hours depending on the user's display settings.

Appendix 6: SmartView Nano (HumanWare) and Ilook (Jarik Staffs) product descriptions

Taken from their websites: www.humanware.com and www.jarikstaffs.com

Apart from the fact that the SmartView Nano is black and the Ilook is white, these products are identical. They are very different from the other products on the list because their screen is far smaller. They are designed specifically to look at things such as train tickets/ measurements/ receipts etc, rather than to read lengthy pieces of text.

These products are small and compact, weighing less than 4 oz (160 grams), with magnification ranging from 5x to 20x. These products are powered by a rechargeable battery and have an auto shut off mode. Its freeze-frame function allows you to capture an image and then bring it closer for viewing.

Main features

Magnification

- 5x to 20x

Display

- 1.8 inch (4.6 cm) colour LCD
- Viewing modes: Full colour, inverse

Battery

- Rechargeable – 3 AAA batteries
- Usage time: 3 hours continuous

Dimensions

- 115 (L) x 80 (W) x 20 mm (H) (4.5 x 3 x 0.8 inches)

Weight

- 106 grams (3.7 oz)

General

- Easy to use controls
- Freeze picture
- Auto shut off to prolong battery life
- Built in lighting

Includes

- Video magnifier
- AC power supply
- Carrying strap

Appendix 7: The Pico product description

Supplied by Telesensory Europe
Information taken from their website: www.telesensory.eu

Colour contrasts

Bright colour, positive text (black on white), negative text (white on black) or yellow on blue modes.

Description

4 inch colour LCD display portable battery operated magnifier

Magnification range

- 3x to 11x

Features

- The device has positive text mode for black text on a white background; and yellow text on a blue background mode
- Legs allow viewing at different angles
- Just two buttons: one to turn the device on and off and another to change the mode
- Can be used to write under
- Battery life: 1 hour 15 minutes continuous use
- Battery charge time: 2 hours

Dimensions

Length:16.51 cm by width:8.89 cm by height 2.54 cm. Weight: 0.28 kg,

Appendix 8: The Nemo from Enhanced Vision product description

Supplied by Enhanced Vision
Information taken from their website: www.enhancedvision.co.uk

The pocket-size Nemo is lightweight and affordable. Look-up phone numbers in seconds and perform everyday household tasks with ease. Incorporating a 4 inch viewing screen with digital magnification - this ultra portable device can go anywhere.

Key Features

- Lightweight & Compact
- 4" Anti-Glare LCD Screen
- Brightest Image in its Class
- Largest Field of View in its Class
- 4.5 to 9x Adjustable Digital Magnification
- 6 Viewing Modes (including 2 colour select)
- Freeze Frame control takes a temporary picture
- Tactile Controls allow for ease of use
- Three (3) hour battery life
- Two (2) year warranty

Appendix 9: The Quicklook Zoom from Visualeyes product description

Supplied by Visualeyes
Information taken from their website: www.visualeyesuk.com

Like the Quicklook, the Quicklook Zoom is an easy to use, hand-held, full colour electronic magnifier. The Quicklook Zoom uses the very latest digital technology to produce a beautifully crisp and bright image and sets a new benchmark for image clarity and configuration. It can be used to magnify text, photos, and maps. It's compact size and variable magnification means that it's small enough to fit in a jacket pocket or ladies handbag, but big enough to make a difference.

Features

- Variable magnification x3 to x18 in 10 steps.
- 4.3 inch wide aspect, hi-res, colour
- TFT display.
- Built in monitor.
- Comfortable to hold - rubberized casing.
- Lightweight and portable - only 250g (8 oz).
- Freeze function - freezes information on the display.
- Easy to use on-screen display interface.
- Enhanced reading modes black/white, white/black, and semi-colours (56 colour combinations).
- Real sound feedback on controls.
- Lights "OFF" feature for reading backlit displays e.g. mobile phones, microwaves etc.

- Can be orientated in any direction.
- Signing cheques and making notes are all possible due to the tiltable camera.

Benefits
All the benefits of the standard Quicklook but with increased magnification range and enhanced semi-colour reading modes (56 colour combinations possible).

Battery Life
4 - 7 hours depending on the user's display settings.

Appendix 10: The Pebble from Enhanced Vision (NEW)

Product description as taken from their website: www.enhancedvision.co.uk

Pebble's small lightweight design makes it the perfect companion whether you're travelling or at home. Easily read labels, prescriptions, price tags, menus, bus schedules and so much more with this ultra-portable video magnifier. Carry Pebble in your pocket, purse or strap it onto your belt, the only time you'll know its there is when you need it.

Key features

- Adjustable magnification of 2x to 10x
- Lightweight 219 gram design
- 3.5" high resolution LCD display
- Adjustable brightness
- Easy-to-use tactile controls
- 6 Viewing Modes
- Freeze Image feature with capability to magnify
- Foldable and adjustable telescopic handle with comfort grip
- Easy writing capability
- Over 2 hours battery life (2 rechargeable batteries included)
- Two (2) year warranty

Appendix 11: The Mano from Optima (NEW)

Product description as taken from their website: www.optimalowvision.co.uk

The Mano is sleek, stylish and simple to use - but most of all, it puts discreet magnification right in the palm of your hand.

Travelling, shopping, reading menus - there are a lot of things you can do with your Mano. It weighs just 5oz (139g) and fits easily into a pocket or bag. You need never be without your Mano, wherever you are.

With its built-in stand and automatic picture correction the Mano makes writing simple and easy to manage. Whatever angle the Mano is used - even upside down, it presents its picture the right way up. This makes it suitable for left or right-hand use

The Mano's rechargeable battery runs for up to 2.5 hours between charges, giving you plenty of time to share your reading with all the family.

Mano has colour options that suit your visual needs, with perfect natural colour to aid comfortable reading.

Whether it's a train timetable or a packet on the supermarket shelf, there are times when what you want to read is just too far away, At the touch of a button the Mano captures up to three snapshots that you can then view at a comfortable distance.

The main advantages

- compact, light weight, discreet
- easy to use with simple, clearly arranged functions
- includes fold-out writing stand
- fully variable magnification from 1x to 20x
- automatic picture orientation for left or right-handed writing
- snapshot function to capture up to three images
- in addition to full colour there are five further colour modes

- compact - measures just 3.5" x 3" x less than 1" (8.9 x 7.4 x 2.1 cm)
- light weight - under 5oz (139g)
- rechargeable Li-ion batteries operates for approx 2.5 hours - recharges in approx 2.5 hours
- hand strap, protective bag

Appendix 12: Supplier/s contact information

Product	Supplier name and address	Telephone
1. iLook	**Pamtrad Customs Ltd.** The Stables 22 Ruddington Lane, Wilford Nottingham NG11 7BH	0115 981 663
	Jarik Staffs Ltd 1 Carlton Square Western Downs Stafford ST17 9UG	01785 600 327
2. Smart View Nano	**HumanWare** Russell Smith House 2 Bullmatt Business Centre Northampton Road, Rushden Northamptonshire NN10 6AR	01933 415 800
3. Smart View Pocket	**HumanWare** Russell Smith House 2 Bullmatt Business Centre Northampton Road, Rushden Northamptonshire NN10 6AR	01933 415 800
4. The Looky	**Pamtrad Customs Ltd.** The Stables 22 Ruddington Lane Wilford Nottingham NG11 7BH	0115 981 663
	Enabling Computers Castlefields Newport Road Stafford Staffordshire ST16 1BU	01785 243 111
	Force Ten Co Ltd. 6 Beckley Parade Leatherhead Road Great Bookham Surrey KT23 4RQ	01372 450 887

Product	Supplier name and address	Telephone
	Hagger UK Ltd. Unit 7 Business Centre West Corner of: Sixth Avenue And Avenue One Letchworth Garden City Hertfordshire, SG6 2HB	0845 882 0505
5. The SenseView P430	**RNIB** Peterborough PO BOX 173 PR2 6WS	01733 37 5000
	Microlink(PC) UK Ltd Microlink House Brickfield Lane Chandler's Ford Southampton Hampshire SO53 4DP	02380 240 300
6. The Quicklook	**Visualeyes** Unit 2B New Line Road Sutton in Ashfield Nottingham NG17 8JQ	01623 754 646
7. The Pico	**Telesensory Europe Ltd** Sherwood The Quarry Calne Wiltshire SN11 0BX	01249 814 309
8. The Nemo	**Enhanced Vision** Unit C, Plot 5 Merlin Way Quarry Hill Industrial Estate Ilkeston Derbyshire DE7 4RA	0115 944 2317
9. The Compact+	**Optelec** 2 Millfield House Woodshots Meadow Croxley Business Park Watford, WD18 8YX	01923 231 313

Product	Supplier name and address	Telephone
10. The QuickLook Zoom	**Visualeyes** Unit 2B New Line Road Sutton in Ashfield Nottingham NG17 8JQ	01623 754 646
11. The QuickLook Focus	**Visualeyes** Unit 2B New Line Road Sutton in Ashfield Nottingham NG17 8JQ	01623 754 646
12. The SenseView Duo	**RNIB** Peterborough PO BOX 173 PR2 6WS	01733 37 5000
13. The FarView	**Optelec** 2 Millfield House Woodshots Meadow Croxley Business Park Watford WD18 8YX	01923 231 313