the Digital Picture: a future for digital images in UK arts education

1. Introduction

This preliminary report presents the first phase of results emerging from *the* **Digital Picture** project. Proposed and run by AHDS Visual Arts (the visual arts centre for the Arts and Humanities Data Service), the project was commissioned by the Images Working Group of the JISC (Joint Information Systems Committee) to establish a national overview of issues, and potential solutions, relating to the use and impact of digital images within visual arts, higher education institutes and associated organizations.

1.1 Report Summary

It is clear, from the results of *the* **Digital Picture**, that there are serious concerns within the arts education community relating to the impact of digital technologies on arts education and, in some ways, on the arts in general. Although the central focus of the Digital Picture was on digital images, it soon became apparent during the consultation with the community that discussion of the problems could not be constrained by such a label: the real fears relating to digital images are as much to do with educational processes and pedagogical values as with the quality of JPGs or the latest imaging software.

The vast majority of respondents to this survey feel that the increase of digital images in arts education has had an impact on them. For an extremely heartening three quarters of people, this impact materialises as an improvement in the learning and teaching environment, with two thirds believing that the rise in digital images helps them to be more computer literate. However, less than a third of the community remains unconcerned at the corresponding loss of traditional products, skills or knowledge.

Much of the fear lies in the speed with which change is happening, and in concerns that there is a lack of forethought and consideration for any negative impact that such change brings. Furthermore, the new technology seems to threaten livelihoods and the essential qualities of 'human' skills, with an apparent shift away from traditional expertise and resources towards increased 'virtual learning' and reliance on online materials with all attendant problems The community has problems with finding the right images for study; problems of reliable provenance and image quality; problems of ownership and licensing costs; and problems relating to educational agendas being led by technological advances. And, for tutors and students alike, there is a perceived lack of support and investment for the new technologies across the sector. In particular, there are fears that, although a balance of old and new is to be desired, financial and strategic imperatives mean that this is unlikely to happen. Institutes will not, the community believes, maintain 'out-of-date' equipment and practices because of issues with cost, space, expertise and, increasingly, health & safety.

Despite such concerns, the consultation has clearly demonstrated that, overall, the community is keen to embrace the new technology, but in a measured and informed way, and in a manner that would compliment, rather than replace, traditional art teaching and practice. Sculptor Antony Gormley, when asked about digital imaging by AHDS Visual Arts Director Mike Pringle, at the Association of Art Historians' conference in April, perhaps sums up the art education community's feelings about digital media. He stated that his studio practice now made use of digital technologies and that "the Angel of the North could not have been made without digital space", but also emphasised the importance to him of taking his work "out of the virtual and into the real".

2. Background to the project

The rise of digital images and their supporting technologies within arts education brings, without doubt, one of the biggest and most profound changes that the sector has ever seen. Everything, from teaching in the classroom to finding images in the library, is having to adapt to the new model.

the **Digital Picture** has grown directly from a desire within arts education communities to explore these changes. By giving a voice to everyone in our art colleges and university departments, in all parts of the UK and at every level, the project was created to identify clear ways for the community, as a whole, to erase the problems with, and embrace the strengths of, images in the digital age.

Statement on the *raison d'être* of *the* **Digital Picture:**

> **"The Digital Picture has been established to explore issues relating to the effects of the digital revolution on our use of images. It will identify problems and develop practical solutions; liaise with stakeholders and interested parties; and offer guidance to teaching, learning and research communities."**

Initiated in 2004, the project was proposed in a paper entitled: The National Digital Image Initiative [Pringle 2004]. The paper emerged as a result of AHDS Visual Arts' close connections with the arts education community and a corresponding awareness of a number of common fears and worries across that community, relating to the ubiquitous rise of digital technologies. In order to collate a clear picture of the issues and, most importantly, to establish which were genuine causes for concern and which were unfounded, the JISC Images Working Group agreed that it was important to conduct structured research. It also acknowledged that, if genuine problems could be clarified in a meaningful way, potential solutions would be easier to identify or develop.

3. Method

The primary aim of *the* **Digital Picture** was to identify tangible problems relating to digital images, within the visual arts education community, and to then outline feasible solutions to those problems. To achieve this, the project set out to meet the following objectives:

1. National consultation of the affected community and all associated parties;
2. creation of a consortium to represent the community via seminars and online conferencing;
3. establishment of working parties to discuss a number of specified issues;
4. literature/peer project review;
5. documentation of subsequent analysis and resultant recommendations.

This report highlights the findings of the first and most significant of these objectives, the National consultation of the affected community and associated parties. It also draws on the findings of the remaining objectives to date, though they are ongoing and a final report, containing more comprehensive details, will be available later on in the year.

3.1 National Consultation

Because the intention of *the* **Digital Picture** was to elicit a view that would be representative of an entire community, and in order that all members of that community could feel that they had an opportunity to contribute, the project decided to hold a broad, open consultation rather than, for example, questioning a small representative subsection of the arts education community. To facilitate this approach, a questionnaire was devised that enabled respondents to answer simple questions on a range of digital image subjects that were considered to be important. There were ten general questions with a total of thirty seven associated statements to respond to. To assist and prompt response, each question was accompanied by general information about each subject area. However, the questionnaire was also devised to elicit more subjective information through a blank area for written responses. This permitted respondents to discuss their thoughts on any given subject in an unrestricted way and, importantly, inform the project of issues not covered by the questions themselves (1 in 5 respondents used this facility, giving 912 comments).

Two thousand printed A5 booklets containing the questionnaire, associated information and a postage-paid reply envelope were sent out to art colleges/schools and university art subject departments, as well as to a number of institutions and organisations associated with art education. Ten thousand double-sided A4 leaflets promoting an online version of the questionnaire were also sent out, as well as messages to twelve art education email lists. Respondents were able to complete the questionnaire online, or download a Word of PDF version of the complete document.

Results indicated that over 150 institutions took part in the consultation, including some forty universities and over thirty associated organisations, including Tate, Victoria and Albert Museum, Imperial War Museum, National Museums & Galleries of Wales and Scotland, National Portrait Gallery and English Heritage.

In order to engender further, more in-depth debate, a number of free-to-attend seminars/workshops were arranged across the UK. A pre-launch workshop was organised and hosted by the University of St. Andrew's, Scotland where the format for the National consultation and accompanying debate was established. The consultation and questionnaire were formally launched in April 2005, at the annual conference of the Association of Art Historians, hosted by the University of Bristol.

Eight further events, encompassing England, Wales, Northern Ireland and Scotland, were carried out through April, May and June 2005 and the consultation part of the project ends with a workshop at the annual conference of the UK and Ireland Art Libraries Society, to be held at Aston University, Birmingham on Saturday 8th July. Workshops were hosted by University of Wales; Manchester Metropolitan University; Surrey Institute of Art & Design, University College; University of Ulster; Plymouth School of Art and Design; Courtauld Institute or Art; University of Northumbria at Newcastle; and, Glasgow School of Art.
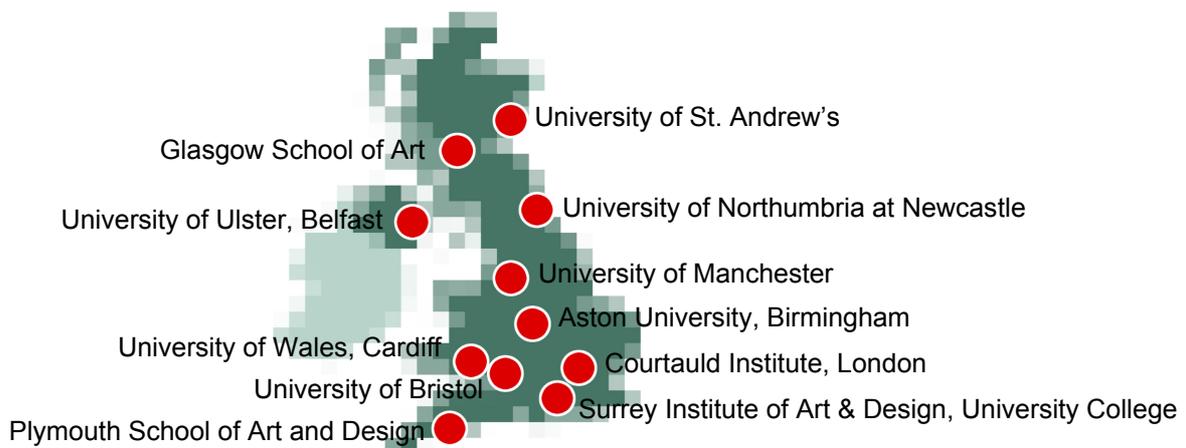
Figure 1. Workshop/seminar venues.

4. What the community says

This section presents the results of the consultation.

4.1 Respondent data

Respondent breakdown was as follows: 502 people completed questionnaires and 257 signed up for workshops/seminars. The website received 128,743 hits (5,814 visitor sessions) and 458 people signed up to the Digital Picture email list. Data regarding role of respondent, educational level which he/she is involved with, and age, were also collected.

The data is given in the following table.

Role	%	Involvement in	%	Age	%
Student	15	Further education	17	Under 18	1
Support staff	8	Higher education	40	18 – 30	21
Artist	8	Masters	17	31 – 50	45
Lecturer	28	PhD study	13	Over 50	32
Managerial	9	Post doctoral	7	Blank	1
Researcher	10	Other	6		
Librarian	12				
Art historian	5				
Other	5				

Table 1. Role, involvement and age of respondents.

4.2 Questionnaire data

At the outset of the project, potential issues were divided into ten broad areas and, for each of these areas, a number of responses were elicited. The following subsections (4.2.1 to 4.2.10) include: the text that accompanied each area in the questionnaire document; the statistical results of the questionnaire; and a summary discussion of results, subjective responses and workshop/online debates.

N.B. All figures given in the following subsections are a percentage of responses.

4.2.1 Increase in digital images

Supporting information

Arts education, like everywhere else, has felt the rapid growth of computer-based, digital technologies in recent years. The benefits of these new technologies can usually be clearly seen; for example, we all recognise the increased opportunities for sharing information (including images). This applies not only within our teaching and learning environments, but also across other parts of the country, and even other continents. However, inevitably, there is another, less positive side to the steady advance of new technologies; one obvious effect being that many technologies that have been used successfully for years disappear as a result. In September 2003, well-known slide projector manufacturer, Kodak, announced that production and sales of their machines would end in June 2004, with service and support ceasing in 2011. Slides have been a mainstay of arts education for a very long time and a change to new image formats is clearly a significant occurrence.

> "..in recent years, slide projectors have declined in usage, replaced by alternative projection technologies. "
>
> www.kodak.com/US/en/corp/pressReleases/pr20030926-01.shtml

Nonetheless, the rise of digital images will certainly continue (especially with constant improvements in digital cameras and projectors) and, for many in arts education, the fact that they are rapidly becoming a core part of the educational toolset is a clear demonstration of, and reason for embracing, the practical value of the digital revolution.

Response statistics

Question: Digital images are on the increase in arts education. What overall impact does this increase have on you?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
It improves things for me in the learning and teaching environment	49	25	2	2	22
I worry about the loss of traditional products, skills or knowledge	23	23	14	15	25
It helps me to be more computer literate	38	28	6	5	23
It has no impact on me	3	3	76	10	8

Summary

86% of respondents feel that the increase of digital images in arts education has had an impact on them. For an extremely heartening 74% this impact materialises as an improvement in the learning and teaching environment, with 66% believing that the rise in digital images helps them to be more computer literate. However, the advantages come with provisos. Only 29% of respondents are unconcerned at the corresponding loss of traditional products, skills or knowledge. It is clear, from seminar debates, that much of the fear lies in the speed with which change is occurring, and that lack of forethought and consideration for any negative impact. Also, the new technology seems to threaten livelihoods and the essential qualities of 'human' skills, with an apparent shift away from traditional expertise and resources towards increased 'virtual learning' and online materials.

Selected quotes from respondents

On the positive impact of digital images:

"I have found my increasing confidence and experience in using new technologies creatively and as an educational tool both invigorating and illuminating!"

"Learning to use digital images has invigorated my teaching and as a 50 years + lecturer this has really benefited me."

"The freedom to carry around my own library of images and slideshows and create lecture slideshows on the hoof has made me much more productive and flexible, plus the ease of constructing composite images and text."

On the improvement of the learning and teaching environment:

"There can be little doubt that digital images ARE the future of visual culture education. They are more flexible, user-friendly, easy to produce and reproduce and more accessible than slides."

"It certainly helps with the 'hooking' of students into photography as the results are more easily seen quickly. It is therefore faster to give critical analysis and progress made."

"The switch from slides to digital images does require additional work but the up side to it is amazing, and worth the effort, as many more images are available all the time on the web and students expect more computer literacy in the classroom, in my experience. I teach design history and the history of technology/material culture and have been pleased by how much broader the image base I have is now than my slide collection."

Warnings on the loss of traditional processes:

"Can result in a loss of understanding of the physical nature of things. Digital images need to be used in conjunction with an understanding of the artefacts themselves."

"Digital technology provides alternative learning materials to improve variety within teaching. But should not replace face to face methods. Technology is replacing traditional more 'costly' techniques such as printmaking in many colleges. This is short-sighted - rather new technologies should be integrated with traditional methods."

"We have a large investment in traditional slides that is threatening to become redundant; this worries many."

"As more images are made available online I worry about the increasingly common presumption that traditional forms of research become less necessary. In particular I worry about the loss of 'research skills'."

"We recently subsumed our discrete BA in Photography into a digital multi-media BA in Media Arts. This enables students to specialise or become multi-practitioners. However, the loss of traditional, alternative analogue processes, that could be quite explicable in the digital age, means that we lose many of those qualities that drew us in in the first place."

"Our users are very reluctant to use digital images and LCD projectors - we have the equipment but no one wants to use it despite offers of technical support. It can be quite frustrating."

Other worries:

"The downside is that it is so much easier for the students to produce a large quantity of sub standard images."

"Concern that the new image formats have longevity - will they be overtaken by new technologies and become redundant. Issues of investment by my institutions - will it be 'format wars' all over again?"

"Digital imagery could make a much more significant impact in the learning environment if we had sufficient hardware and software resources."

"It can provide our students with a far wider visual resource upon which to draw. BUT whilst for students with developed and sound critical faculties this is very useful, for those without those skills, the plethora of unedited imagery can be a handicap, unless viewed through a portal which offers guidance."

"Staff development and quality of training are key issues. There is no standardisation as yet."

"The boom in digital technologies is a phenomena that has yet to be of proven value to the educational community. This may sound extreme, but it is never-the-less true in many obvious ways."

"The point is that impacts and effects cannot yet be judged."

A balanced view:

"However it does offer the opportunity for fusion between digital and traditional methods/techniques, allowing each to inform the other. The argument exists that the loss of traditional methods adds kudos to them, think the underground vinyl revolution after 'the death of vinyl' with the advent of compact discs."

"The loss of traditional products, skills or knowledge is not an automatic result of digital technology. Change and the advancement of new skills and knowledge may be."

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"Good practice should ensure a healthy balanced diet of traditional products, skills and knowledge and computer-related products, skills, techniques and knowledge."

4.2.2 Fit for the purpose

Supporting information

There is much debate within art and photographic communities about the quality of digital images, especially when compared to photography and traditional printing media. Although digital imaging technologies and projectors have improved immensely over recent years, there is still a perception that the image quality does not match that of traditional slides in terms of colour, contrast, clarity and depth of detail (resolution), especially where fine details need to be examined; for example, in the study of art history. It may well be true that the level of affordable digital media has not attained a high enough quality for certain purposes but this may not be the case throughout the art education sector. It is quite feasible for a lecturer to simply want an image (perhaps a photograph of a particular building) for illustrating a point in a presentation. To him/her, the depth of detail or precise colour balances may not be important, as long as the educational point is made.

"Then there's image quality. The images produced by most consumers are dire… this will improve in time… but it still has a long way to go before it overtakes analogue photography. An average 35mm colour negative holds the equivalent of several gigabits of data."

<div align="right">John Naughton, Sunday Observer
February 2nd 2003</div>

Response statistics

Question: Digital images can be used in a number of ways, but are they better at some things than they are at others?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
They are excellent for illustrating talks and lectures	62	25	3	2	8
They are only good for web or intranet pages	5	5	52	22	16
They are never good enough quality for studying closely or printing out	8	14	33	22	23
They are useful for creating new artwork	43	26	4	4	23

Summary

Overall, the community accepts the use of digital images as of a sufficient quality for use in their professions: 87% feel that they are excellent for talks and lectures; 74% consider them suitable for uses beyond web or intranet pages; 69% have no doubts about their usefulness for creating new artwork; and, only 22% are concerned about their quality for close examination or printing purposes. Nonetheless, heated discussions have been had about just what 'fit for purpose' means: to an art history lecturer, high resolution may be essential to make a particular point, whereas, for an FE student illustrating an essay, the subject matter may be more important than the quality of the image itself. The broad needs of such a diverse community create something of a tension when trying to identify the desirable qualities of digital images, and this in turn can impact on the way that art is taught.

Selected quotes from respondents

In support of digital images:

"High quality digital pictures are invaluable media for illustrating presentations. They can not only reside on the screen, but if handled properly can produce high quality printouts that match and even exceed manual prints."

"A good quality image is an excellent teaching tool."

"Digital images can be used with a level of flexibility, immediacy and efficiency which photographic transparencies or high quality printed materials cannot provide."

"Digital images can be used in any teaching environment and for any teaching activity."

"Most of the slides I have been using are a joke - washed out colour, warped, falling out of the mounts. The digital images are a huge step forward."

On issues of image quality:

"The issue here is quality and size of image, and the display capabilities of the hardware. A good digital image - 48-bit & 600 ppi - should be better than a well-taken 35mm slide; a poor scan at screen resolution is significantly worse. The resolution available on an original or first-generation copy slide, well-taken from the original and well-projected, continues to be better than that of most data-projectors (particularly if more than one image is being shown at a time). Quality IS a significant issue for art historians - but the tools are improving, and a more widespread understanding of acceptable digitisation standards is (slowly) developing."

"The availability of digital images for the support of teaching, and the ability to use them in flexible ways far outweighs the (diminishing) limitations of definition. With cameras easily available at 8.5 megapixels, and reaching 17 megapixels+, quality of images is a choice."

"Digital images, in the sense that they have now reached the critical quality/affordability threshold, will most likely be the form of choice for most applications for the foreseeable future. There are some issues over their permanence and the seemingly endless revisions of the supporting technologies."

"The quality issue is only relevant if you try and download pictures from the web, or if you don't have a good enough understanding of resolution and colour management when taking and saving or archiving your own images."

"I tend not to use these images for the level of detailed scrutiny needed in e.g. Art History, but I know the image quality is at present unsatisfactory - though no more than that of a bad slide."

Warnings on the use of digital images:

"Unfortunately, too many people and establishments view them as a cheap and faster option for working with no consideration for the broader educational picture."

"The new artwork usage is obviously subject to copyright issues."

"Currently students disregard any copyright or IPR issues connected to specific artworks when creating new artworks from old artworks. The BIG issue for me is how to strike a balance between encouraging their creativity and respecting the original artwork and artist."

"The real deficiency is that too few museums and image sources provide images of high enough resolution, or detail."

"Useful for creating new artwork but only on the basis that digital technology does NOT entirely take over - which IS happening on some courses."

"As always, it depends on the quality of the photography."

"Superficially good looks can be easily produced - but is this progress?"

4.2.3 Effect on traditional education

Supporting information

As digital images and associated technologies become the norm, there are, naturally, elements of doubt and concern in some areas, particularly in relation to threatened changes in working practices and associated cultural shifts. Fear of change is often justified to some extent and any new media must be considered very carefully in terms of its broader impact. In 1936, Walter Benjamin discussed both the negative and the positive impact of mechanisation on art, in his book 'The Work of Art in the Age of Mechanical Reproduction'. In today's digital revolution, people in arts education might want to know things like whether there will be a decline in those arts that require large working environments, as more space is devoted to the much smaller computer terminal. Also, will librarians and tutors be made redundant as their contribution is replaced by much cheaper digital resources?

"Technology is not a teacher: its use cannot and should not replace interactions with responsive adults."

<div align="right">Digital images can play a useful role to support active learning, in
Learning & Leading with Technology, May 2004 v31 i8 p34(3)</div>

Some of these things will happen but digital images do, of course, offer huge benefits such as increasing access to art in terms of volume and scope. They also create opportunities for interacting with art that is otherwise inaccessible; for example, the prehistoric cave paintings at Lascaux, which have been closed to the public since 1963. Furthermore, other advantages of digital imagery, like the increased capacity to manipulate images and to share them amongst art students and staff, both internally and across the wider community, are obviously extremely valuable assets to arts education.

Response statistics

Question: What effect do digital images have on more traditional aspects of art education?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
Using images on-screen reduces face-to-face contact with other arts people	13	14	24	20	29
Access to many digital images is better than just visits to galleries	18	19	27	15	21
We must not lose traditional media and approaches	51	25	2	8	14
Arts education is much improved by digital images	37	34	3	2	24

Summary

76% or respondents are adamant that traditional media and approaches should not be lost as a result of digital images, with less than half (44%) convinced that digital on-screen activity is not having an adverse effect on face-to-face contact. 37% believe that increased access to digital images is an improvement on the limitations of gallery visits but, as some of the quotes below illustrate, most feel that, ideally, students should have both. Despite these concerns, 71% feel that arts education is improved by digital images. Seminar debates on this topic revealed many other issues, relating to but not covered by the questionnaire. In particular, there were fears that, although a balance of old and new was to be desired, financial and strategic imperatives meant that this was unlikely to happen. Institutes are unlikely to maintain 'out-of-date' equipment and practices because of issues with cost, space, expertise and, increasingly, health & safety.

Selected quotes from respondents

On concerns about the loss of the traditional:

"Traditional media (i.e. the analogue photograph) does have qualities that digital images do not. Similarly, their are older styles of photography that possess qualities that are hard to replicate exactly using digital techniques."

"A balance must be struck between traditional and digital methods as both have a major role to play."

"Both digital and traditional technologies are a must! They work together and are not mutually exclusive."

"There are pros and cons to both digital media and traditional crafts. There are aspects of an image that simply cannot be appreciated by digital imaging and can only be respected when seeing the piece for real in a gallery."

"Viewing artwork in the 'flesh' cannot be replaced by digital reproduction. Artworks also need to be experienced in 'real' space to fully appreciate surface/physical qualities. traditional media must not be replaced - arts education not improved - just different."

"Students increasingly expect to find images 'on tap' and make fewer visits to galleries/major exhibitions to experience original works of art."

"its too early to say yet - digital technology is not up to speed. Also it is hard to create some of the effects that make photographs special, the small flaws etc digitally. I think sometimes digital images can be stale and we should not loose touch with the old as they have their own things to offer."

"Improved access to images via digital means is undoubtedly an improvement in this information age. however, traditional slide quality is far better for art history lectures, if there is a need for a detailed analysis of a painting for example. Visits to galleries should still be an important part of arts education as there is nothing to compete with viewing a work of art in the flesh."

Face-to-face contact:

"Poor teachers will always use a/v aids as a substitute for face-to-face interaction."

"From personal experience of teaching computing such as Photoshop, student-to-student interaction is radically altered when compared to studio based teaching. A balance needs to be retained between the two."

"Technology is not a teacher. Nowhere is this truer than in digital media. Just because access to sophisticated imaging tools is easier and more affordable this does not negate the need for relevant face to face education in this area."

The benefits to arts education:

"Whilst there is no substitute for examining an original artwork, increasing access to digital copies can only help our understanding of the topic. Imagine how 'in the dark' most people were in the days before photography and the wider dissemination of artworks."

"In an ideal world it would be great to physically see EVERYTHING. That, of course, is not possible so it must be an advantage to be able to see those we cannot physically stand looking at in some way or other. I would not suggest that digital images can in any way replace a physical presence but is a wonderful alternative to not seeing them at all."

"A sound educational process will use digital facilities to enrich and complement rather than displace the physical experience of objects, materials and other people."

"Arts education is different because of digital images, but not necessarily better. However, digital images available for viewing on the web are generally accessed more easily/readily by students."

"Contact with reality is still essential for students to have a full contextual understanding. Traditional media and methods help students to understand and explore a wider range of creative possibility."

"Nothing can replace standing in front of the actual picture that an artist painted in a gallery. There is an extra dimension to this experience that cannot be reproduced by even the highest quality art print, let alone a digital version of it. But digital images will reach such a wide audience that may then be inspired to seek out the original."

"If one lived in the Hebrides access to digital images may be the only alternative to visiting galleries in person, but nothing can ever entirely compensate for seeing an original."

"On issues of accessibility for the slightly less privileged I would say arts education is improved by digital images."

4.2.4 Finding digital images

Supporting information

Some institutes will doubtlessly find the resources necessary for making available many digital images to their staff and students, even if this takes place over a long time. Such images could be made available via an intranet or Virtual Learning Environment or, if political and financial restraints allow, made accessible to the wider community through a co-ordinated, joining-up of resources from different places on the Internet. But this sort of approach wouldn't prevent people from scanning in or creating their own images, though quality and copyright issues might have to be explored in these cases, and would not negate the use of other ways to access images. Already, there are a number of companies who offer images to educational users (Bridgeman Art Library, ARTstor and Saskia) and several online services specifically set up within the education community (AHDS Visual Arts, EDINA and Artifact). It is also important to remember that a huge majority of people prefer to discover resources through commonly used Internet search engines (such as Google) and, although this brings many potential pitfalls, this approach will no doubt grow as the search engine companies mature and further recognise the needs of communities like arts education.

Response statistics

Question: If you wanted a particular image in digital format, what would be the ideal way to obtain it?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
I would like my institute to provide all the images that I need	26	21	18	14	21
There should be an online 'one-stop-shop' for arts images	32	25	11	9	23
Browsing via internet search engines is the best way	16	21	13	21	29
I would like to have the resources to scan it in or create it myself	46	26	5	6	17

Summary

Finding the right digital images for use in education is a problem, particularly given quality and ownership issues, and only 37% of respondents feel that the Internet currently offers the best solution to this problem. 72% feel that they should have the training, time and tools to create digital images themselves; 57% would like some sort of one-stop-shop on the Internet; while 47% feel that their institution should deal with the issue. However, the community recognises that these issues are complex: most understand that it is unrealistic to expect everyone to have expertise in digitisation; and, more significantly, there is widespread concern that no single person, institute or organisation can possibly provide all the images that all students/staff will require.

Selected quotes from respondents

On problems with the Internet:

"Internet search engines produce the most rote images, work looks a bit standard."

"There is a problem with the quality of images sourced via the internet. Usually they are not high resolution and can't be used by students in their artwork (and if they can there are all the copyright implications)."

"The third (Browsing the Internet) is fine but there are copyright problems."

"Hundreds of 'self-scans' populating the web is very dangerous in so many ways."

Do it yourself:

"Although browsing for images is sometimes the best and quickest method to find a digital image, the results are never the same as when you find, compose and take a picture for yourself. That way you are sure to get exactly the picture that you need."

"We generate all of our own digital artwork."

"Most academic staff would not have the facilities or expertise to create digital images of a good enough quality. This work is best left to experts in the field."

"I have unique images in my slide library. I would like to be able to scan them to increase usage/availability. (perhaps a DACS license to make it legal?)"

"I do already scan images, but original artwork larger than A4 is impossible."

An online one-stop-shop:

"Ideally a core collection of images should be available from online resources accessible via a one-stop-shop, but this should be supplemented by an archive produced in-house, tailor made for the courses taught in each institution."

"A central resource for core images from Art & Design History, freely available, plus more specialised images made in the institution would be the ideal."

"The best option must surely be a global, subscription based image library."

"I already use copious examples from existing online sources for illustrative material for background material, such as historical perspectives on digital media and new developments. A 'one-stop-shop' implies a new development with a cost attached. Why reinvent the wheel? Search engines are the de facto standard and whatever may be set up would not change custom and practice in this area. Users would still go to a search engine to look for images, simply because there is the chance that a better image might exist somewhere else on the internet (for free)."

"I can't imagine that a one-stop shop is a realistic aspiration."

"I was at the Manchester seminar yesterday and in the group that proposed government lobbying to make national galleries provide their images online (hosted in a way to keep them secure of course). We all agreed that an online register of where images were held would be the best way forward."

"Ideally one centralised resource giving subscribing institutes all their images would be the most efficient. This is unlikely to happen now (I thought at one time it would, rather than all of us producing digitised collections of our own) because we all have differing needs and the emphasis tends to be on the biggest common denominators i.e. traditional fine art material which is not what an institute like mine needs."

Limitations of institutional approaches:

"Colleges are notoriously bad at providing the imagery required for teaching effectively, even though they insist on staff providing teaching excellence."

"If an institute provides all images then the serendipity is lost - and that's a CRUCIAL aspect of digital process. It's not first about format, it's about METHOD as well!"

"Dangerous assumption on the part of any institution that they are in position either to source or know the requirements of a learner or educator."

"In a sense I would like my institution to provide everything on a plate for me but there is much to be gained in (researching?) my (art?)/teaching myself!"

"No single institute could provide all the images one might need."

4.2.5 Technological resources

Supporting information

Whilst most arts lecturers and tutors will acknowledge the fact that tools such as Microsoft's PowerPoint are commonly used, there can be a mismatch between the apparent functionality of such tools and their own needs. One example of this is the common arts practice of using dual projectors to illustrate differences/comparisons between two or more images, something that would be difficult to achieve with many current digital   tools. However, it should be acknowledged that new tools and advanced versions of current software are coming onto the market all the time.

"In the seemingly inexorable rise of technology in schools, the data projector has recently been demonstrated to be the piece of equipment whose popularity is growing fastest."

The Guardian, Tuesday September 23rd 2003

Many arts institutes now have sophisticated display hardware, advanced computer suites and fully integrated networks and associated facilities though, in some users' minds there can still be uncertainty about plugging one machine into another or about things working at all. Also, new equipment does cost money, and needs constant support and upgrading, and this can have a major impact on the availability of digital images or the tools to make the most of them. But, prices are constantly dropping and, as institutes improve their basic infrastructure, continuity and availability of technological resources should improve and, to those who have discovered tangible uses of such technology, the issues relating to a slow adaptation process are far outweighed by the positive benefits.

Response statistics

Question: The successful use of digital images depends on technology. What issues does this raise?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
The benefits of new technologies will far outweigh any problems	24	31	7	9	29
I have no confidence in the reliability of technology	4	9	34	34	19
Our institute is fully kitted out with the latest technology	10	24	20	21	25
I cannot get the tools I need	11	20	18	22	29
New technology costs too much	23	24	12	14	27

Summary

Just over half of respondents (55%) are confident that technological benefits will outweigh the related problems – the rest are not so convinced, particularly when it comes to the financial burden of technology, with only 26% believing that costs are reasonable. In many cases, also relating to costs, it appears that the arts education community is frustrated at the levels of available technological resources: only 34% feel that their institute is fully up to date, and only 40% have the tools that they require. Nonetheless, the technology does seem to have turned a corner where most people now accept it as part of their normal working day rather than as something new; the main issues, as with so many things, are to do with money, priorities and alternative agendas.

Selected quotes from respondents

On the balance between benefits and problems:

"The use of new imaging technologies is a 'costs/benefits' issue, and different organisations will put themselves at different points in a scale, but sectoral infrastructures need to anticipate wide and imaginative use of digital images."

"Problems, particularly related to student learning and psychological effect are only just being considered. There are real benefits, but there are also numerous problems and frustrations."

"Initial expenditure will far outweigh the savings in the future. Technology enables me to contact someone in say, India, have a reply the same day and even send the image within a few hours."

"Cost is a relative term. Efficiency can outweigh notional cost."

"The amazing rate at which technology improves is quite scary. It's a balancing game to wait for something to come down to the right price whilst also keeping up with new technology."

"Funding has always been a problem!"

"There is clearly a cost issue with technology but if funds are found it is often only a temporary solution as even newer technology is made available and demands higher specifications of software and accessories."

"New technology doesn't necessarily cost too much but we don't have the budget in our university to invest as much as we would like in it."

"New technology does create stress as the timeframe shrinks & expectations are raised beyond realisitic targets."

"I regularly act as a problem-solver with new technology and, whilst my services have been called upon more times than I care to remember, in not one instance has the problem been the fault of the equipment. In EVERY CASE it has been the failure of the user to know how to use the equipment. I do recognise, of course, that this does indicate a significant lack of training."

Inadequate technological resources:

"New technology is expensive and budgets reduce each year."

"My institution seems prepared to pay for new technology but not for the extra staff time to set up and run the project."

"Institutions are more likely to support direct and narrowly focused requests from successful academics than the huge task of providing a shared, carefully managed service."

"Institutions would like to make good quality images available for educational use, but are unable to do so because of technical, budgetary and resource limitations."

"Most ICT support staff do not have the pedagogic understanding to properly support the use of digital images."

"In my last job, the institution did not have adequate equipment in the class room, nor did they provide the training or motivation to enhance the shift to digital images. I often used my own laptop, because I knew I could rely on it over the computers in the classroom but on several occasions, there were problems with the LCD projectors."

"The hardware for digital technology is relatively easy to get a hold of if there is a real need. However, the software that readily edits and complements the pictures is not. These programs are very expensive, and not readily available except to a select few. The only way to feasibly obtain editing packages is to acquire pirate copies."

"As a lecturer (and formerly as a teacher) and arts practitioner I've always had to invest in the technology I need, especially software, but also hardware. At least I can get it with education discounts, but there is a resentment that to keep abreast of new developments, iterations etc. there is no institutional funding and if PAYE no tax relief available."

"It is not only technology but training to use it & to keep those skills current given the pace of technological change."

4.2.6 Usefulness

Supporting information

A MORI survey published in February 2005 looked at issues relating to the Internet (www.common-info.org.uk/audienceresearch.shtml). It discovered that 92% of users believe that reliability of information is an important factor in accessing websites. This fact comes as no surprise to the education sector where students or lecturers using any image resource, digital or not, need to be sure that what they are using has a sufficient degree of integrity. Also, whilst it may not matter to some users if colours are not calibrated to a very specific standard, it is likely that poor searching or browsing facilities will directly impact on their usage of resources on web, intranet or Virtual Learning Environment. Ignoring the needs of those for whom a resource is developed can be an expensive mistake: in the House of Commons' 3rd report on the recent £50m failure of the UK e-University (published 21st Feb 2005) it was noted that 'the UK e-University failed largely because it took a supply-driven rather than demand led approach'. Focusing on user demands is particularly important for the many users who have difficulties with badly thought out websites; for example, those with learning or physical impairments. In this respect, images pose a number of problems since, often, their information value cannot necessarily be accessed by those with visual impairments or less sophisticated technology. It may be that good descriptions or structured metadata can help with this sort of problem, and with searching for digital images in general, but the creation of such extra information can be quite a burden for those creating resources.

Response statistics

Question: Are there particular aspects of digital images that improve or reduce their usefulness?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
I need to know they come from a reliable source	53	25	5	4	13
Things like colour, contrast and clarity are unimportant	8	4	67	15	6
Browsing and searching for images should be easy for all users	75	16	1	2	6
Added information or metadata is not essential to my work	5	8	38	24	25

Summary

Issues relating to the usefulness of digital images are of great concern to the arts education community: 91% think that finding images should be straightforward (unsurprisingly), and in seminar discussions it was clear that many do not believe this to currently be the case; 78% recognise the importance of an image's provenance; 82% place great importance on the inherent qualities of the image itself; and 62% believe that it is imperative that images come with associated information. These factors are fundamental to pedagogical practice and the community fears that the abundance of 'free' images now available to students (and lecturers), and the increased emphasis on unrestricted use of the Internet, are setting misguided and sometimes dangerous precedents for arts education.

Selected quotes from respondents

On the provenance and metadata of digital images:

> "I need to know the origin and provenance of an image. Knowing the date, place and originator of an image is usually essential. This is so I can tackle issues of IPR and copyright, but also so that students and staff can put an image into context."

"I need the metadata and need students to pay attention to it."

"Some images of relatively well known works of art/design are reproduced in reverse. Taking images at face value from a popular search engine can be disastrous for students final dissertations/essays without the fall back position of academic, verified sources."

"Reliability in terms of academic accreditation and referencing is vital."

"Good, imaginative metadata is vital if the authority of an artwork is to be taken seriously."

"Added information is always good."

"Copyright is a major issue for libraries. Students need reliable and accurate metadata for referencing & citing sources."

"Metadata and interoperability are key aspects of digital data; this is especially true in digital imaging."

"Metadata is nice but not essential. If one is talking about composition or subject matter the extra information is not required."

"Lack of metadata is what stops you from finding images."

"Standard metadata essential for images on web to be useful."

On image quality:

"Image quality is sometimes important, sometimes not."

"Colour, contrast and clarity are, of course, important for any image. Frankly, anyone who thinks otherwise has peculiar ambitions, or is a fool."

"On this subject I know that lecturers will use the scrappiest image imaginable from the most questionable source if that is all the can get hold of (and to be honest some of them don't look very hard)."

"All that matters is the quality, accuracy and size of the image."

"The variety of sources and variability of quality will become increasingly significant as we come to depend more and more on digital images only."

"My experience of helping students in that generally resolution on digital images is ok for sketches, draft ideas - but there is often a need for good resolution and good printing quality."

Ease of access:

"There are obvious issues to do with accessibility and using images (digital or otherwise), but bodies such as the R.N.I.B. encourage the use of images and multimedia in learning resources as long as an alternative is made available for those who cannot use the images supplied (e.g. correctly produced metadata)."

"'Browsing and searching for images should be easy for all users' - I am glad to finally hear this debate being raised."

"No, it should be as hard as possible? What kind of question is that?!?!?"

"Access should be easy. Images need to be authorised and information on usage/IPR holder supplied in metadata tags."

"The new accessibility legislation and good practice for websites requires some effort to update existing sites, but the effort is worth it; while new sites can be designed with accessibility in mind from the start."

"I have seen digital presentations by MAJOR national repositories that - from a visual viewpoint - were dreadful. Ease of access is one thing, but again, quality is a vital component of this argument."

"Training and support is vital for teachers and students to make it possible to access and use the available facilities with confidence."

4.2.7 Ownership

Supporting information

One of the strengths of digital images lies in the fact that they can be shared, re-used and manipulated in ways that were impossible before the advent of computers. However, this also means that they can be mistreated with the same ease, i.e. it is now straightforward to produce perfect copies of digital images without regard to copyright or intellectual property rights (IPR), and broadcast or publish them without due reward, or credit, to the rightful owner of the material. However, such issues, which are often ignored or misunderstood can be extremely complex, and the ramifications of misuse are wide-reaching and potentially disastrous in both terms of legality and image usage. Nonetheless, many people in education, especially within libraries and legal departments, are very aware of the problems of ownership rights.

"Take away from English authors their copyrights, and you would very soon take away from England her authors."

Anthony Trollope, 1815-82, taken from his autobiography (1883), ch 6.

Constant debates and discussions, to try to find ways of resolving some of the ownership issues, take place within arts education and also with organisations like the Copyright Licensing Authority (http://www.cla.co.uk/) and the Design and Artists Copyright Society (http://www.dacs.org.uk/).

Response statistics

Question: Digital images can be shared and re-used very easily. Should we worry about ownership?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
I don't want other people to make money from using my image	50	18	7	4	21
Most images on the web are free for anyone to use	13	15	33	18	20
Using images for educational purposes should not be illegal	59	16	8	5	12
My institute should take care of legal issues relating to digital images	61	18	3	5	13

Summary

Copyright and IPR associated with digital images are extremely difficult areas for the arts education community. Illustrating the contradiction of a community made up of both creators and users of images, 68% acknowledge the need to protect the financial rights of image creators whilst 75% believe the use of images should be free within education. Perhaps surprisingly, nearly half of respondents (48%) do not seem to appreciate the legal issues of downloading images from the Internet. Most, it would seem, would rather have someone else sort out the problems: 79% believe their institution should take care of legal issues. Copyright will continue to be a major crippling factor in the advance of digital image use within arts education, partly because of the dilemma of creators vs. users, but more fundamentally because of a much wider 'lack of control', or 'freedom', depending on your viewpoint, with the way images can be created and shared via information communication technologies.

Selected quotes from respondents

On creators and users of copyrighted materials:

"Intellectual property rights should never be infringed. Particularly in an educational environment where the ownership of ideas and images is a central issue."

"My husband is a photographer so issues of ownership are of primary importance. His livelihood is undermined by people stealing his images online - it has happened - and also the possibility of them using them badly which damages his reputation."

"Just because they are on the web does not mean that they are free to use. It would surprise me if 5% of the images on websites are there with the permission of their photographers."

"I don't want people to make money out of my images but I do not mind if they are used by other people for educational purposes."

"Some people sell their work as web-based art and should not be financially threatened by educators' desire for 'free' materials. Nevertheless the opportunities to find and use copyright free images has been very useful to me & my students."

"The lively hood of digital, all artists, must be protected."

"Maximum levels of sector wide support, similar to the photocopying agreements will reduce complications, reward producers of imagery appropriately and encourage use."

"Legality and copyright are the heart of the matter. It seems to me morally reprehensible that anyone should claim money from image use in education. Those who do, or seek to do so, should be named and shamed publicly."

"We have our own assets which I would not wish to be exploited by others for financial gain; additionally we may have a duty to the person giving permission for the photography."

"The idea that others may make money from my images doesn't worry me. I have contributed many images to art 'how-to-do-it' books without any money changing hands at all. But I would be upset if my images were used by others without acknowledgement."

"People think that if its on the web its fair game. How it got on the web is another matter. You would not steal book from a bookshop, so you should not steal an image from the web."

"There are ethical issues on image use which I have not resolved in my own head. The distortion or manipulation of digital images, which is so readily achieved, raises all sorts of issues."

"An understanding of ownership issues is very important, as matters of rights are involved. I want to be able to trade in digital images. The recording of rights information in relation to particular images, the storage of this information in a useable way, and access to this store of information, are all useful aims in assisting this activity to develop maturely."

The legalities of using digital images in education:

"The government has the opportunity at any time to exempt education from copyright law and if it is serious about education it should do so. Students should be free to download images & manipulate them within the college environment. If they publish or make money from those images, sue them."

"Academic staff should be made fully aware of the implications of copyright and the legal use of images that they might download, scan or photocopy. Most lecturers seem to believe that if it's for educational use they can help themselves to anything they find."

"There needs to be some type of licence/agreement whereby students can be creative without worrying about copyright/IPR issues."

"Non-commercial educational use should be on a cost-recovery basis only. Galleries and museums - especially those with Access & Learning departments - should be included in the legislative exceptions granted to 'educational establishments' as defined by the UK Copyright Act. At present only schools, colleges and universities are 'educational establishments'."

"Educational use of copyright images should be free!"

"Institutions need to accept responsibility for appropriate use of images and be sensitive to IPR and copyright issues."

"Define 'educational purposes'. Multiple copying for HE course packs is different to single use in a lecture. I would expect to be paid for the former but not the latter, nor for low-res use in school projects."

Institutions and legal issues:

"I think copyright issues are very important and we should teach students to respect copyright. I don't think institutions should hide copyright issues by 'taking' care of them. I think we should be made aware of them at source."

"Each individual should be responsible for/ aware of the legal issues otherwise it would be impossible for the institute to police their staff."

"Copyright should be understood and respected by all who use images in an institutional context. Clear guidance on this is lacking!"

"Unfair to expect individuals to by experts on IPR, so institutions should have clear policy on image use."

"I believe that any exposure is better than none at all. Our institution is very up to the beat on copyright."

"To teach budding art professionals they need to learn about copyright and intellectual property, as well as the ethics behind it."

"Legal issues need to be sorted out a NATIONAL, rather than institutional, level, with a strong presumption in favour of 'fair dealing' for educational and research purposes."

4.2.8 Support in using digital images

Supporting information

Many of those concerned with preserving or promoting the use of images do not have the time and/or appropriate training to achieve all that they would like to achieve in respect of digital images, nor to instigate such work by others. The lengthy time commitments, skills, knowledge, hardware and resources necessary for digitization on any significant scale are usually found in the ICT departments of colleges or universities, rather than in arts faculties. Also, although many arts education institutes now have substantial systems set up, the whole language and procedural side of utilising digital resources can be confusing or daunting to someone who is not used to them. However, as the new technology matures and its place in our environment is better understood, there is a natural increase in our knowledge about it. This soon filters out to more and more people, either through new skills being taught, an increase in understanding through regular usage or through improved access to those people with the appropriate knowledge. Gradually, many of the problems will get smoothed out and, as a consequence, budgets, procedures and training programmes will begin to evolve in much more positive directions.

"It is obvious that the art school must come to terms with the new environment. In order to digest the unfamiliar codes and relationships created by our new electronic faculties, they must be normalised as a part of the working environment."

Stroud Cornock, from 'Media Handling' report to Fine Art
Board of Ipswich Civic College, 1965-66 session

Response statistics

Question: What considerations need to be made to help you get the most out of digital images in art education?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
I feel that I can always turn to an expert when I need advice or support	26	24	14	14	22
More money should be made available for digital images	39	32	3	3	23
My institute's procedures for digital issues are clear and easy to understand	11	12	23	24	30
I cannot get the training I need	12	18	17	20	33

Summary

Support for the arts education community, in using digital images, has a way to go before the community feels that it is satisfactory, with 71% believing that more money needs to be spent. Only half of respondents (50%) already feel that they can get help when needed, and a mere 23% understand their own institute's procedures for matters relating to digital images. However, 37% feel that they can get the training they need, compared with only 30% who feel that they cannot. Part of the problem here, is that the community is unsure about just what it needs training in. More importantly, there are concerns that digital matters are taking over at such a pace that many people in the arts are being forced to become experts in areas that simply should not be part of their job.

Selected quotes from respondents

On the issues of support and training:

"Not all courses are at my level. I need cross over courses where digital images are used in conjunction with traditional media."

"Far too much useless 'training' already! Give me the money to buy myself a new computer and some software updates, I'll figure it out fine, thanks."

"Training on this issue has not been offered at my institution."

"There are more experts around such as TASI and AHDS, which are invaluable. But in my institution there are not. Training should take priority when considering digitisation."

"Training is often available but not affordable."

"Sometimes particular people understand things in different ways. So I do feel intimidated sometimes to ask simple questions about computer imaging and the ways they work."

"Good technicians are essential but you should take responsibility for your own learning."

"We as an institution are fairly well equipped and the technicians are good but we could do with more training."

"It is not more money that is needed but better targeted money."

"Do the ""experts"" know all the issues? An expert in say Photoshop, may have come understanding of IT but maybe not copyright issues."

"Training is always available - it's the funding for training that isn't. If you're prepared to pay for it yourself, you can easily find tailor made training."

"Support for new technology is still chasing demand. Finding time for training is a problem."

"Training is a difficult one. It is available but you do have to be able to clearly identify (and justify) what it is that you need when you don't always know exactly what would be of most use or indeed if it is available."

"I haven't the time to take all the training I would like to do. I can't always get the expert help I would like to although I do have access to a lot. I tend to learn by my mistakes and therefore improve a little all the time."

"Ongoing training in new technology/software is essential for staff & students."

"I work in a Learning Technology Support team. We are trying to get across the message about using digital images correctly, but there are certainly training issues for both academic and support staff that need to be addressed urgently."

Money and institutional procedures:

"My department in the Institution has a large and well-catalogued slide library. There are several academics who are keen to use it as the basis of a digital collection available on our intranet. The problems arise with the cost of resources needed to convert the slides - and the project is shelved again and again. The feeling of senior department managers is that images are freely available on the Web and that to scan, catalogue and store thousands of images from slides is a waste of resources. Also, instead of student work being archived on slide as it used to be, tutors make digital records on CD which become part of their own archive."

"Finding images is incredibly time-consuming which adds considerably to one's workload - this is nowhere acknowledged."

"Educational establishments use of digital technologies is too often motivated by economics rather than the quality of the educational experience."

"We have a good budget for slides which I am already directing more and more to digital images. The infrastructure to deliver them is not there yet, but awareness is growing of what might be required."

"We are fortunate at the Sainsbury Centre as we have a very forward looking team. Money in the Art world is increasingly difficult to obtain but where possible we push forward as a team to develop this side of things. We are in the process of developing our own guidelines."

"I'm not sure we actually HAVE a policy yet - it's all too early and policy would need to be continually updated, leading to an erosion of confidence."

"Digital imaging is a tool for learning in Art, Media and Cultural Studies and the decisions about the required hardware and software should be in the hands of the teachers in these areas, not the ICT 'experts'. Digital imaging is often held back by IT management decisions that are more to do with maintaining their own status quo than creating collaborative systems."

"Our policy towards digitisation, use of digital images, use of visitors cameras etc is very unclear as yet. there is a high degree of suspicion which had hindered any more towards full digitisation. I do have good contacts with other institutions and they have given me some excellent advice."

4.2.9 Digital images in research

Supporting information

For many people in education, digital image research will mean finding pictures to illustrate presentations, lectures or essays. For these purposes, digital images, if made accessible in the right numbers, formats and subjects, obviously serve a very useful purpose. However, research relating to digital images obviously does not stop there. As well as the dissemination of high-quality image collections for researchers to make use of, there is also plenty of scope in the development of new ways of using images, and, of course, research into advanced imaging systems; for example, virtual reality or content based image retrieval.

As technologies and processes are understood and exploited further, digital images may also have a significant role to play in research that focuses on the creation of the image itself: practice-based research. What is certain is that the use of digital images in the arts will be an increasingly important part of research across the UK.

"At the heart of research across all disciplines is the determination to understand the world which we make and inhabit. The arts and humanities bring to that search approaches and understandings that are unique to our disciplines, and it is on these that we must build the heart of our case."

Geoffrey Crossick, The Guardian, 2003

Response statistics

Question: Digital images have a role in research, but are there issues surrounding their use in this area?

	Strongly agree	Agree	Strongly disagree	Disagree	Not sure
They offer great opportunities for practice-based research	46	30	1	1	22
Existing online image resources are not sufficient for my research	28	25	6	11	30
Digital images are an essential part of publishing research online	45	28	2	4	21
We need more research relating to digital images	47	29	2	3	19

Summary

Only 17% of respondents believe that existing digital image resources are sufficient for research purposes, and 76% think more digital image-related research should be carried out. The reasons why are clear: 76% think that digital images offer great opportunities for research founded on practical work; and 73% feel that they are an essential part of publishing research online.

Selected quotes from respondents

On the lack of research resources:

"On behalf of lecturers I can say that most cannot find all the images they need in digital form."

"Existing online image resources are a huge step forward from even a decade ago and, as such, a great enhancement to research activity. However, it is simply legal restrictions, not technological ones, that prevent these resources from being even better."

"Existing online image resources are too fine art based."

"The demand for full-text online art journals is now huge, but very few database companies provide this facility. I'm told that this is in part due to the cost of clearing the copyright/IPR of images used in journals for their use in full-text online journal databases. Hence, journals that don't contain original artworks are readily available online in full-text (e.g. Business, Health, Education subject areas), but only a limited number of full-text art journals are online (e.g. via Wilson Web Full Text). This is holding art students back."

"You can have too much of a good thing."

"More money should be made available for digital images"

"There is a wealth of material available on line – finding precisely what you want can be an issue. There is also a vast amount of research relating to digital images."

Digital images in research and research into digital images:

"As in all fields, the use of digital images for research is bound to increase, but within the visual arts field there is even more potential, providing it is given the right support."

"Digitisation has made my experience of accompanying my published research with relevant images easier. I am surprised still that so much visually-energetic work in culture studies does not feature images more centrally."

"They offer a potential resource base for research into art, design and architecture history."

"In dealing with research in the purest sense, images should have the same qualitative values of text based research, i.e. be innovative and novel."

"They are a further addition to research. Some students have forgotten about books."

"What KIND of research? WHY do we need it? WHEN do we need it? On the other hand, it's an area that needs exploring and mapping, but NOT colonising."

"There is insufficient research on digital images and their production or on using digital imagery in creative learning or other learning."

"Yes! Much more research please!"

"Using online images to support research papers is essential."

"Digital imaging is making some research active practitioners lazy and complacent, leading to a weak research base in the creative arts lacking in depth, substance, purpose and meaning. We are entering a world of microwave impatience. To allow this to continue will eventually – and very soon - lead to an environment where research in the creative arts will add nothing of value to the furtherance of human knowledge and understanding."

4.2.10 How important?

Supporting information

This question asked respondents to rate the importance of each of the issues covered in the previous nine questions. The question was accompanied a note: please feel free to tick as many of the boxes as you like, but it might give us a clearer picture of what you consider to be particularly important if you restrict your selections to a smaller number.

Response statistics

Question: Of the nine subjects outlined in the previous questions, which are the most important for you?

Impact of digital technology	10
Fit for purpose	13
Effect on traditional education	10
Finding digital images	13
Technological resources	11
Usefulness	11
Ownership	14
Support in using digital images	11
Digital images in research	7

Summary

As the figures above suggest, the responses to this question balanced out quite evenly over the nine subject areas: no single subject stands out as being particularly more important than any other. This is to be expected and is indicative of the fact that a large variety of different respondents were included with varying perspectives and priorities. The subject given least importance was the issue of 'digital images in research' but this almost certainly reflects a lower proportion of researchers against the overall make-up of respondents.

Selected quotes from respondents

"At different times I'm an institutional manager, an arts manager, an educationalist, a staff developer, a writer, a researcher, a curator, a presenter and a photographer - all of these questions are important!"

"As a graphics lecturer, i find increasingly difficult to get my students to take their own images, for use in their work. They think that it is ok to rely on an image from the internet, which are never of a good enough quality or resolution to be used for print purposes."

"Assuming we are talking about the use of digital technologies generally, rather than the very particular question of 2D digital images on screen, the biggest concern is how to retain and support valuable traditional technologies while meeting the demand for escalating and recurrent investment in both standard and high-end digital technologies."

"Support for heterogeneous networks that allow teachers and researchers access to the hardware and software tools that are most suited to our needs, not those of the IT managers."

"All of these issues are important."

"A real issue is that of authenticity."

"Used wisely, digital imagery etc and traditional materials, skills, techniques, should embrace and enhance each other, not hinder."

"Because technologies are changing soooo fast, I think there is a massive need for artists, staff (in educational establishments) and students to have more understanding of how their media works, from the camera to viewing and grabbing from internet, to print."

"Digitisation is often seen in a (invited?) and depressingly techno-led way as 'fun with computers' and a kind of geeky pastime for SOME students. It needs to be presented as a different, and collaborative (broadly), way of LEARNING."

"None of these are burning issues for me - develop the CONFIDENCE to use what is available is for me far more crucial. I feel that this relates to major structural issues within Higher Education. I am very conscious of the urgency of the situation."

"I think this research is tremendously important and would be very interested in the results and outcomes from the consultation."

"Assuming that digital imagery will not be replaced immediately with something else we need financial and technical help to obtain good-quality images to replace slides as soon as possible."

"For me, the most significant problem area is ownership; the most important advantage is the flexible access to images; the areas with greatest potential are the use of technology to enhance images for study, and the possibility of image search by content (via metadata at first, possibly through AI methods in the future)."

4.2.11 General comments

Beyond the questions themselves, the questionnaire and website permitted respondents to add general, or additional, comments. A representative selection is given here:

"My area, graphic design is now mac/PC based, this has led students to feel all creativity is computer based, which it is not. I feel the concepts and creativity can be fogged by this tool!"

"As an art student i find that digital images are very important in the learning process, research, developing, manipulating and for final out comes it allows us to explore another medium and express our work in various ways."

"I like digital images but only for certain things I would not like to see it take over the traditional way of photography."

"The whole concept of digital imaging in education should NOT be seen or judged in isolation to traditional skills and learning in the creative arts, but MUST be evaluated as part of the whole To do otherwise would FURTHER UNDERMINE the UK's once very proud and respected tradition and track-record in the teaching and learning of the creative arts For example, and in the wider context of where digital imaging 'sits', there are now no educational institutions in the UK where traditional 'academic' painting is taught; where perspective is taught ;where sciagraphy is taught, or where drawing and sketchbooks remains the fundamental foundation to all that follows."

"In many cases the students are leading the way; It is their expectation that material of all kinds should be available digitally."

"The move to a digitised image world must be a process of reflection and strategic decision making, we must not be too hasty to skip the traditional practices before there are clear concise standards for digital imaging across all areas of the world giving some one an SLR camera is still the best way for a student to understand the fundamentals and magic of photography."

"I'm pleased by your demand-driven, rather than supply-driven approach, since other initiatives don't seem to have learnt from the UKeUniversity mistakes."

"What is entirely missing here is the dimension of analysis/modelling through using digital procedures."

"I think this is a vital project and I thank you for embarking upon it."

"This study is much needed and I look forward to seeing the results of this work."

"My main issue is that students work is lacking in basic structures and substance due to the quick capabilities of digital media. It is imperative that we do not lose touch with our basic insights for light and form."

"I don't know how I managed without them."

"It is much harder to teach photography using digital cameras Students use the computer to iron out problems rather than think things through properly at the ideas stage."

"The most crucial aspect of this survey should be to establish the legal copyright side of image use so that it is clear for all, and not prohibitive to the use of the new technologies."

"Watch this space - with advances in tech. quality, social change and use and increasing access for everyone - its going to get exciting and interesting."

"The Digital Image has a very revolutionary affect on art in many aspects concerning aesthetics, which needs to be looked at."

"What a blessing it is to have two eyes that work!"

"It will be interesting to see if in 200 years time whether there will be real galleries containing both digital and traditional art from our times I hope so and believe that there will be, as art history is littered with new experimental techniques which overtime have been assimilated into the larger world of art."

"Such a wealth at our fingertips!"

"The internet gives us the greatest ever opportunity to provide public access at many levels to our visual heritage."

4.3 *the* Digital Picture email list

A discussion list was set up (via the JISCMAIL service) at the outset of the project in order to engage the arts education community via another channel, using the concept of virtual conferencing. Over 450 people have already subscribed to the list and it is anticipated that it will enable, and stimulate, debate within the community over coming months. In the ten days following the launch of the first topic on 27th June, 34 messages were posted to the list exploring, in some depth, themes such as:

- the adverse affect computers have on the learning and teaching of traditional skills
- the erroneous belief that PCs are cheaper than personnel
- computers as an artistic tool
- the inability to subject digital objects to traditional forms of intellectual enquiry and track artistic process
- parallels with changes faced by the art world with the advent of photography in the 19th century

Selected quotes from respondents

"I love the struggle of shoving paint around on a surface but also love the instant gratification of a photo. Digital even better."

"[the computer] is a tool, a tool to be used to extend our vocabulary of the visual world."

"Tool, not solution!"

"I think that if artists and designers of the future are not trained to use non-digital process, tools and materials, they will have a more limited vocabulary for expressing ideas"

"Art surely lies in the intention of the maker whether it uses paint or programming."

"Working in that [education] sector, I see there is a tendency for management (who are neither artists nor IT specialists) to erroneously think that savings can be made on salaries by the provision of suites of computers."

"It's surely a matter of finding a balance between the possibilities created by new technology whilst not throwing the baby out with the bath water."

"I don't think this (IT) is a threat, so much as there is a very substantial challenge involved. After all with the advent of photography, painting was supposedly about to die a death. But still lives to fight its corner to this day."

"What's more important, the artists skills or the artists' message?"

5. Next steps

Whilst the central part of the project, the consultation, is now over, work will continue until mid-August 2005. It will collate research material from elsewhere; continue to enable online discussions; and create a final report to include the findings of this further activity, as well as more detailed analysis and recommendations for future action. The final report will be submitted to the project's funders, the JISC Images Working Group, and made available via the JISC and on the AHDS Visual Arts website.