



New Media Literacies: A Language Revolution

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Digital technologies have created a new environment for human thinking, learning and communication. Many think of this as a media revolution. Me, I think of it as a language revolution. I think that digital technologies have fundamentally changed the nature of the tools available to the human species for thinking and human expression. I believe that they have extended traditional media as we have known them, to create new e-media, and that they have created a new class of immersive experiential media to add to those that we have known in the past. More critically, I think that the context for the interactions and exchange of these media have been altered drastically by digital technologies, creating a very new digital "soup" in which we humans are now exchanging and developing our ideas.

In the following pages I will outline this argument, providing a context in which it can be discussed and expanded. I will try to avoid many of the confusions with terminology that I have stumbled upon in the literature, and to refrain from advocacy for the new simply because it is unusual. My goal is to provide a consistent framework and language in which the emerging new media literacies can be considered, evaluated, and, if appropriate, encouraged.

Media Evolution

In the last five hundred years civilization has moved from an oral culture to a print culture. Instead of the

community relying on the memory of its members, people can write down ideas and others can read them in very different locations at very different times. Memory is not cherished as it was in earlier eras, but one's ability to organize ideas for general context-independent understanding is, as is the ability to read ranges of text-based publications.

Graphical media, combining images and print, have added to the range of expressions available in the culture at a large scale. Advertisements and magazines full of pictures have become mainstays of the popular culture. Even textbooks have been sprinkled with graphical elements, the intent being to motivate and interest as well as to explain in most instances.

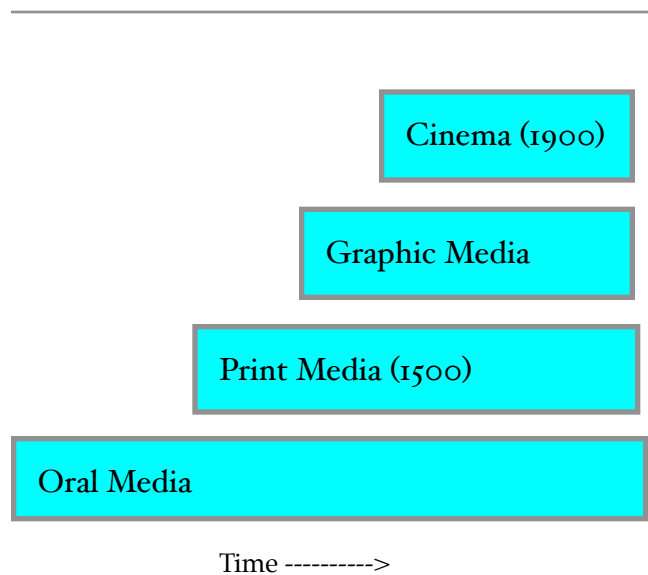


FIGURE 1: TRADITIONAL MEDIA EVOLUTION¹

Cinematic media have also become powerful elements in the media landscape, as movies and television have become central experiences for the culture. Whether projected in a finely tuned theatre or on a small black and white tube, the allure of the moving image and its accompanying sound has proven irresistible. The communications engagement of cinema

¹ There are a variety of each media type, and other categories can effectively be used to show this evolution. This simple analysis has been chosen purposefully so as to make the logic of this discourse understandable.

has proven remarkable, as has the constant innovation and imagination expressed on the silver screen.

Notably, the introduction of each of these media is quite predictable by a consideration of the technological support required for its production and consumption.

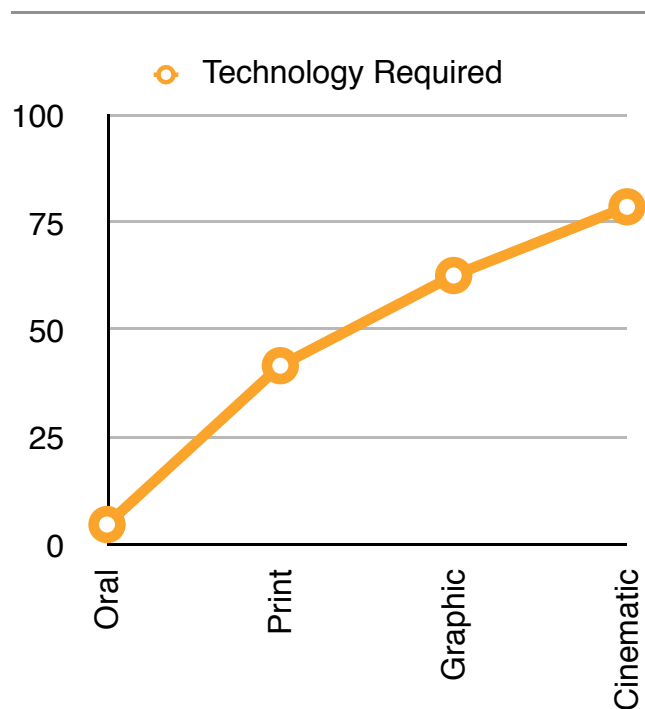


FIGURE 2: MEDIA DEVELOPMENT FOLLOWS A PREDICTABLE TECHNOLOGY SEQUENCE²

Each of these “traditional media” has been extended and evolved over the years. Each has added to the “palette” of human communications, not replacing the earlier media nor changing earlier media by interacting with them significantly.

Language Arts

A number of these media types have been judged to be central to the general literacy of the population. Speaking and listening (Oral Media) and reading and writing (Print Media) are considered the core “language arts” in most school curricula. They are revisited year after year, and considered as central in de-

fining general literacy for the population. As suggested in Figure 3, these media are highly valued in schools and other arenas that focus on general literacy concerns.

The other media --- graphic, cinematic, and multimedia --- are not typically embraced so fully as part of critical literacies for all citizens. They are typically included in discussions of “media literacy”. Curricula have been developed which provide training for school children in media literacy; some school districts and some nations (U.K. and Australia) have made these mandatory for all students. Some of these media literacy programs are oriented toward how students can “read” the messages of the popular culture, and how they can avoid the persuasiveness of advertising and other public messaging. Others are oriented to how to create media; typically these programs are not available to all students, instead being offered to individuals interested in the crafts of graphics or cinema or art. The prevalent judgment is that schools should focus on oral and print literacies, and that graphical, cinematic and multimedia literacies are interesting but not critical to preparation for general success and understanding.

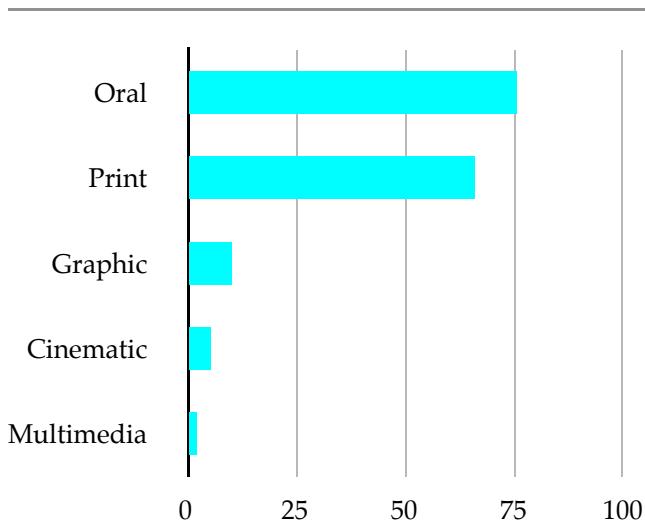


FIGURE 3: IMPORTANCE OF MEDIUM FOR “LANGUAGE ARTS” IN THE 20TH CENTURY (GENERAL LITERACY)

² It is interesting to consider just what the world would be like if these media were introduced to civilization in another order. This is the grist for some good science fiction, but not probable given the technological infrastructure needed to support each media type.

	ABSORB (Input)	CREATE (Output)	PRESENT (1-many)	SHARING EXCHANGING (1-1) (many - many)
TRADITIONAL MEDIA				
Oral	Listening	Speaking	Speeches (Radio)	Conversation (Telephone)
Print	Reading	Writing	Publishing (Printing Press)	Correspondence (Postal Service)
Graphic	Seeing	Drawing Diagramming	Publishing	Joint Sketching
Cinematic	Viewing, Watching	Producing	Broadcast/ Theatres (Videotape, DVD)	
Multimedia	Viewing	Information Design	Showing	

FIGURE 4: TRADITIONAL MEDIA: A RANGE OF CHARACTERISTICS³

Characteristics of Different Media

There are a number of different characteristics of each media that can be distinguished, and which show commonalities across the media (see Figure 4). At the most basic level, within each media one can acknowledge the process of *absorbing* (input) and the process of *creation* (output). One listens as well as speaks, reads as well as writes. One sees already prepared graphics, and creates one's own by drawing, diagramming or a range of other graphical creation techniques. One is frequent a viewer of cinema; a small few are involved in the production of cinematic media. One can view a multimedia work, which includes combinations of the other media, and one can design new multimedia creations.

It is tempting to say that the first process, *absorption*, is a passive process whereas *creation* is an active process. I suggest that instead they are the two sides of an important feedback system which enhances communications. Active listeners can speak articulately. Good writers know how to read carefully. Experience in drawing fine tunes ones perceptions. Movie viewing educates one about the cinematic vocabulary that can then be used in the personal production of a new movie. Viewing multimedia prepares one to design individual work.

Other attributes of these media that prove useful to identify are *presenting* and *sharing or exchanging*. Considering these explicitly acknowledges a communications context. *Presenting* is a broadcast model, where one composes a message and then delivers it to an audience in its full form. *Sharing or Exchanging* involves participatory interactions where typically rapidly created messages are exchanged for comment or elaboration. Noteworthy is the fact that each of these is affected greatly by key technologies (the printing press, the radio, etc.)

³ These are a sampling of different characteristics that are very basic. They have been chosen to show the very most primitive elements of each media type. The examples given are a few amongst many that are possible, included to illustrate the general meanings intended.

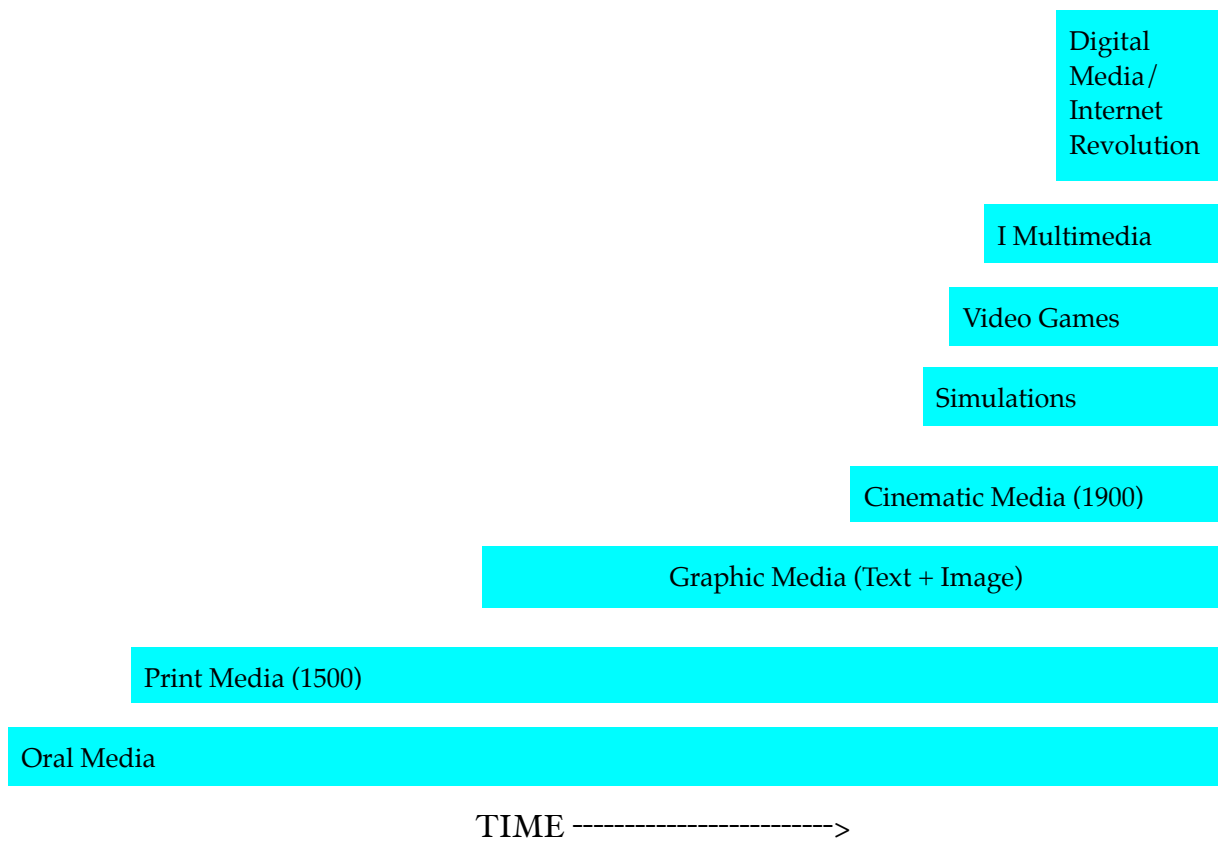


FIGURE 5: THE INTERNET AND DIGITAL MEDIA DISRUPT THE EVOLVING MEDIA DEVELOPMENT AND CREATE A MEDIA REVOLUTION

A Digital Media Revolution

Even with the introduction of new digital media in the late twentieth century, the progression of media evolution continued. With technology developments, each emerged as a new media form. Simulations emerged which allowed individuals to assess “if-then” activities and analyses, for work and for pleasure. Video games established themselves as a new kind of digitally supported media which engaged users in highly interactive exchanges. Interactive multimedia showed itself as an electronic medium that could support the simultaneous delivery of text, image, movies, and sound.

Then came the widespread adoption of the internet and digital media, and the normal progressions were interrupted. The common digital formats allowed the combination of media types and the easy transition between them in everyday tasks. The interconnectivity of the internet changed modes of distribution, the nature and availability of audiences, and created incredible new opportunities for collaboration. Traditional media changed drastically, as e-Media emerged. Immersive experiential media expanded. And there was established a new language community to support human communication and imagination that was very new and different.

	ABSORB (Input)	CREATE (Output)	PRESENT (1-many)	SHARING EXCHANGING (1-1) (many - many)
e - MEDIA				
Oral	Listening	Speaking	Speeches (Radio)	Conversation (Telephone)
e - Oral	iPod	iTunes, Garage Band	Web Pages PodCasts	Cell Phones LimeWire
Print	Reading	Writing	Publishing (Printing Press)	Correspondence (Postal Service)
e - Print	Hyperlinks Digital Libraries	Word Processors (Revisions, Writing Collaborations)	LaserPrinter Web Pages	eMail, IM, pdf, Blogs, Wikis
Graphic	Seeing	Drawing Diagramming	Publishing	Joint Sketching
e - Graphic	Google Images	PhotoShop, In-Design, Pages	LaserPrinter Web Pages	Pictorial Conversations
Cinematic	Viewing, Watching	Producing	Broadcast/ Theatres (Videotape, DVD)	
e - Cinematic	Interactive Movies	iMovie, Premiere	Web Galleries WebCams	Video Conferencing, iSight
Multimedia	Viewing	Information Design	Showing	
e - Multimedia (Interactive Multimedia)	CD-ROM Products	HyperCard, HyperStudio, Keynote, PowerPoint	Projection, Breeze	

FIGURE 5: THE INTERNET AND DIGITAL MEDIA REVOLUTION CREATE NEW E - MEDIA

New e - Media Emerge

Many describe the changes in media due to the internet as “new media” or “digital media”. I find it more useful to consider that each and every “traditional media” was altered drastically. And though traditional media still operate as we are accustomed to (we still read books and draw on paper), new e-media (e-oral, e-print, etc. as shown in Figure 5) have taken a larger and larger role in our activities. We use word processors for our writing, engaging processes of revision, collaborative writing and peer review that were not available with our pencils and pens or typewriters. As we write we put our writing in a format that can be read easily and distributed to others. When we read on the web we not only read linearly but we also hyperlink and surf and engage printed materials in a very different way than when they are delivered on paper. There are similar changes for every cell of Figure 5.

If you consider this figure carefully, you will see that there are at least five significant changes that this move to e-media have produced:

(1) Print Changes Dramatically (2nd Row)

Print media have changed dramatically with the advent of the internet and digital media. e-Print is very different than Print as we have known it. As described frequently by the pundits, the nature of the relationship between producers and consumers, authors and readers, has changed drastically. The amount of print materials available anytime anywhere has multiplied exponentially, and the promises of easily accessible digital libraries are getting more and more realistic. The ranges of new forms of print communications --- email, IM, wikis, blogs --- has been greatly extended, and seems to be continuing to do so, as are the controversies about the reliability and privacy of these new media forms.

My sense at the moment is that a large amount of the interest in the internet is really about e-Print and that few have put their attention to other e-media. This is understandable, given the emphasis on print in our culture, particularly our professional cultures, but it is important to realize that the digital revolution has unleashed many other options for the kinds of communications we have been accustomed to with print and which we have been unable to achieve with print only.

(2) Production Possibilities Magnify (2nd Column)

Many of us are absolutely fascinated, sometimes unduly so, with the idea that as individuals we can make reasonable movies with e - cinema. Cinematic capabilities have long been in the hands of a few “high priests”, and now many barriers to this medium have been removed. Full length feature films with special effects are still in the domain of the professional who has access to large crews and millions of dollars; however individuals and small groups can create quite compelling cinema with tools that are both inexpensive and easy to use. Similarly the tools for recording audio and mixing it are very accessible, as are word processors for print. Graphics production, particularly for casual presentations, are also quite accessible, even in standard word processors, and software to store and manipulate personal photos have become very fluid and accessible.

This enlargement of production possibilities make graphic and cinematic productions much more language-like, as there is a citizenry who are fluent not only as audiences but also as producers.

(3) Economics of Publishing Change (3rd Column)

In print publishing, color is expensive and used sparingly. White space is similarly a scarce resource, as it increases the length of a publication and hence its paper and shipping costs. The cost of a publication is per unit, where this value is higher for small press runs. Distribution also adds an extra cost to any publication.

This all changes as publishing becomes electronic. Color and white space are “free”. Multiple copies of documents can be downloaded without extra costs. Self publishing becomes a much more realistic venture, as does the posting of “out of print” books. Small niche markets can develop for publications, and delivery of public materials --- prepared for schools for example --- can be distributed widely without additional costs.

(4) Multimedia can be Shared: Beyond Paper and TV (3rd Column, 5th Row)

Interactive multimedia --- including combinations of text, images, sounds and movies --- can now be made available as the computer display becomes a viable broadcast medium, going beyond paper and TV screens (and movie projections) as the delivery mechanism for information. Projection capabilities makes this interactive multimedia available to large groups as well as individuals, making it possible to

display computer generated materials to large audiences and small groups.

(5) Collaborative Language Communities Emerge (4th Column)

Perhaps most exciting, the number of communications capabilities that have been developed for collaboration has increased drastically with the digital media/internet revolution. All of the interconnections and the common data format allows for collaborations across time and space at a scale that was hardly imagined a few decades ago by most. Everything and everyone is connected, and so the flow of information exchanges for collaboration is substantial. New media forms --- wikis, blogs, instant messaging --- have become commonplace over a few years, and though principally now in the text domain, one can expect to see these expand to include other media types easily in the very near future. This new "internet soup" provides a dynamism that makes exchanges very fluid, much like spoken language.

Each of these changes are interesting and important, as are others that can be gleaned from this chart. The important thing to notice is that there are changes across many different kinds of activities, and across very different media. Each is important, and contributive to the change in the information world that is encompassing all of us. However, each is different and needs to be considered quite separately if we are to understand the possibilities that are emerging, and to determine which are important for "fitness" in the 21st Century.

eMedia Change Importance of Media for "21st Century Fitness"

With the introduction of digital capabilities, and the extension of the world into the information economy that we have all been expecting, media for the communication of ideas becomes even more critical for literacy, or effective "fitness", in the 21st Century⁴. For in this new information-rich world, a wide range

of media become centrally important for self expression, understanding and communication. Though oral and print literacies continue to be central to human communications, their power is enhanced with e-media and other literacies become more central to general literacy in an interlinked world.

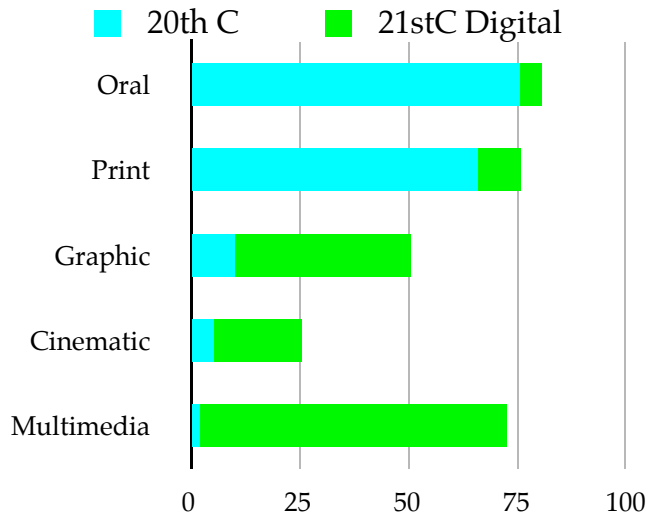


FIGURE 6: IMPORTANCE OF MEDIA FOR GENERAL LITERACY

New Immersive Experiential Media are Introduced

Digital media also include "computer media" that are quite different from traditional media. Designed to take advantage explicitly of the power of computers, they are at their base highly interactive. Unlike traditional media where there is typically some notion of a "message" or a "work" that is created by one and then delivered to others, digital media are continually modified, and often not shared with anyone. Interactions with "computer media" --- including games and interactive simulations --- fundamentally change the state of these systems. Interactions change the message. They are intended not as messaging systems, but instead as "un-mediated" direct experiences. They add to the media that are available for expression in the 21st Century Digital Age, but they are different than other traditional media and e - media.

⁴ I use the word "fitness" instead of literacy to avoid the emphasis on print that literacy has attached to it. Also some of the elements that become important with these "new literacies" include being able to choose the best medium for expression, to move between media, etc. This active capability seems well described by "fitness". I also like the notion that everyone can be fit, though many will not strive to be expert in any particular media form (as in the physical domain where everyone can be fit though few are professional athletes).

	ABSORB (Input)	CREATE (Output)	ORIGINATE	PRESENT	SHARE
Experiential MEDIA					
e - Simulations	Experience & Interact (SimCity etc.)	Modify the Out- comes and Ex- periences	Programming (StageCast, Scratch)	Scenario Devel- opment	Collaboration
e - Games	Experience & Interact (Video Games)	Modify the Out- comes and Ex- periences	Programming (StageCast. Scratch)	?	MultiPlayer Games?

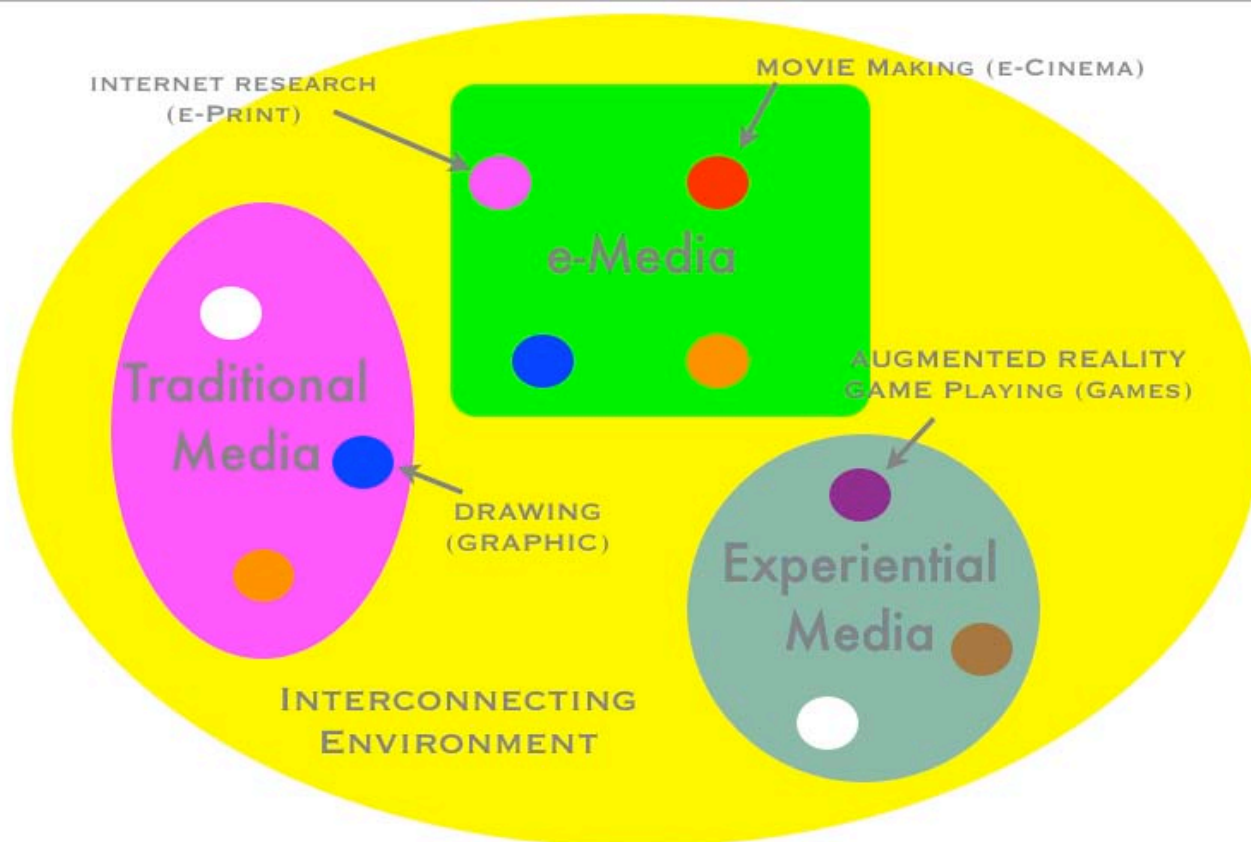
FIGURE 7: NEW IMMERSIVE EXPERIENTIAL MEDIA ARE INTRODUCED

And so there are three quite different classes of media that we should consider in approaching “new media literacies”: (1) Traditional Media, some of which become even more critical in the internet world (eg drawing, movie making --- literacies which are not new “to the world” but are new to the general populace), (2) e - Media, which extend traditional media though not typically replacing them, and (3) Immersive Media, which are fundamentally digital media. All three of these media types are combined and interconnected via the internet. As they are becoming ubiquitous, with mobile wireless interconnectivity that is available “anytime/anyplace”, they then provide a rich interconnected language community, available to the skilled to express ideas to a wide range of audiences and receive idea representations from a large constituency as well.

We can think of these different kinds of media as part of a general “palette” of possible expressions, each of which is full of “new media literacies” (see Figure 8). One example “new media literacy” in Traditional Media is “drawing” from the traditional graphic literacy area. In e-Media we have a range of “new media literacies”, including internet research, which is predominantly e-Print, and movie making from e-Cinema. Augmented reality games are important “media literacies” in the Experiential Media area, as are variations of the popular Sim games.

The interconnecting environment for all these new media literacies encourages interactions between these media. It also supports a powerful domain for collaboration and publishing. In some ways one can also think of media literacies within this general “connective tissue”. These include capabilities of changing media selections based on the task at hand, for example. Another “connective” media literacy is master of methods for effective collaboration. Capabilities of effective multitasking represent another literacy that should be mastered..

There are a number of projects or experiences that can be specified that require the use of a number of these different literacies. One can think of these metaphorically as the “canvases” on which the “palette of media literacies” are used. So, for example, a project that documents a local neighborhood might call upon literacies in e-Cinema (create movie of interviews with local residents), Traditional Oral Media (gather local interviews), and e-Graphics (map making using internet resources).



The Challenge

The challenge is to determine which of the many hundreds of “new media literacies” are important for all citizens, and hence which warrant attention in public schooling. Which are the literacies that will serve important for students to master in order to function effectively in the 21st Century Information Age? Which will help them to understand and then contribute to the world around them, its politics, its science and its literature? How might individuals be best trained in these new media literacies? What are the “canvases” on which students should practice combining these different literacies so that they will be prepared for productive lives?

There will be many innovations in the development and use of new media in our digitally supported worlds. Some of these will be central to entertainment and to business. It is in these areas that we have witnessed substantial innovations already. Some of these will be central to education and to the basic competencies of all citizens. The task is to identify which these are, and then to provide students with mastery in the important media literacies and experience in functioning effectively with them, in areas such as:

- engaging critical judgement in assessing the wealth of available information,
- using imagery in communications,
- engaging collaborative groups in solving problems,
- assessing information gathered from multiple sources,
- expressing ideas in a range of media,
- choosing media appropriate to tasks,

- thinking in multimodal terms, and
- participating actively in collective intelligence communities.

In Summary

There are many different ways terms like literacy, digital literacy, media literacy, new media, new media literacy etc. have been used in recent years to describe the emergent phenomena of changing media use. I have tried in this brief paper to provide a framework that makes useful distinctions in this analysis, and which establishes a vocabulary and point of view that can then be generative in identifying, describing, evaluating and encouraging some of these new potentials. I have also tried to show that a shift to a consideration of a “new language community” can be productive, acknowledging that these media are becoming fluid and rapidly shareable, always available and casually used, quite like spoken language. Many considerations that were in the domain of media scholars have now shifted to domains of psychology and linguistics and sociology and anthropology, as digital technologies are supporting a very new and dynamic “interconnected language community” that requires very different literacies and allows very different analyses and communications than those to which we are accustomed.

This paper is based on a presentation that was prepared (though not completely presented given time constraints) to the “21st Century Literacy Summit” hosted by Adobe, the New Media Consortium (NMC) and the George Lucas Educational Foundation (GLEF) in April 2005. . It provides a framework for the consideration of “new media literacies” in “The New Media Literacies Project” , a collaboration of the University of Chicago and MIT, funded by the John D. and Catherine T. MacArthur Foundation. This first internal draft is meant to invite comments and conversations: kwoolsey@pacbell.net