

# Multimedia: Flash & Fantastic vs Flawed but Fast

## Abstract

This article explores a, perhaps, atypical view about the development of multimedia, and argues that while there is a place for multimedia teams and the professional production of specialised learning resources, there is also a convincing argument that this sophisticated and erudite level of multimedia production is not unconditionally necessary, and in some cases may be detrimental to both the learning experience of learners/workers and teacher/trainer motivation and commitment.

Supportive and contradictory viewpoints are presented together with literature-based commentary about the changing role of teacher/trainers, the ongoing transformation of multimedia, and organisational enablers, which promote and sustain change and development activity. Finally, the practical aspects are briefly explored and a small but varied selection of tools and resources currently available to teachers/trainers and support staff is provided.

## Introduction

The world is changing. Education needs to change as well, since it prepares people to participate in and enjoy this changing world....One important factor is technology. Media now infuse our lives and the ways in which we encounter and appreciate ideas, information, knowledge (Hawkins no date:para.2).

There are few who would challenge the above quotation, as most people who have been involved in education and workforce development during the last decade have seen extraordinary changes, not the least of which has been the accelerating use of technology in educational environments. Technology is an extremely broad and amorphous subject and it is apparent that as an aspect of technology, multimedia has the same characteristics. For this reason, it is necessary to begin by defining multimedia, as Dickinson (cited in Wild et al 1994) notes the term is often ill-defined and ambiguous.

Multimedia is an imprecise term. It may successfully convey the integration of different forms of information, but it is applied to a rapidly shifting technology and is therefore not a stable concept (Wild et al 1994: Part 4 para. 1).

Sophisticated instances of multimedia abound on the Internet, and some education and training staff (and their organisations) may believe that all usable examples fall into this specific category of high bandwidth, multi-level extravaganzas of state-of-the-art technology. A search of the Internet brings a plethora of definitions of multimedia, most of which indicate a somewhat simpler categorisation, for example:

A simultaneous presentation of data in more than one form, such as sound or picture (Ibas Corporation 2005).

The integration of various forms of media for instructional purposes. Typically involving computer graphics, sound, and text (International Board of Standards for Training, Performance and Instruction 2003).

Digital representation of different types of information such as text, graphics, audio and video, so that all of these can be stored in a common medium (such as CD-ROM or computer storage) (Ministry of Economic Development, Manatu Ohuga, Government of New Zealand, 2005).

From this variety of definitions, it can be supposed that a learning resource is defined as multimedia, on condition that *it includes at least two or more types of digital information* eg. graphics, video, audio etc. Provided that this more simplistic definition of multimedia is upheld, the creation of multimedia resources is well within the capability of most teaching, training and educational support staff. There are a few provisos to this contention, which include making adequate instruction, support and encouragement available for staff attempting multimedia development. Guhlin (1996) makes the point that ‘...most teacher/trainers want to learn technology but lack time, access, and on-site support’ (Guhlin 1996, cited in Technology Leadership Team Institute 1999:para.2).

By harnessing the capabilities of teacher/trainers and support staff to customise or augment the multimedia resources created by professional multimedia teams, substantial and far-reaching benefits can be gained.

## Points Which Support This View

There are numerous grounds to support the view that multimedia development is within the capability of teaching, training and support staff including the following:

- Teacher/trainers need to produce resources ‘on the run’. In the past this may have taken the form of photocopied chapters from a book, or a classroom learning activity hastily contrived to fulfil an immediate need. This ongoing need remains unchanged, while often requiring a technology-based approach.
- A cost/benefit analysis of a professionally created multimedia resource may often confirm an expense which is difficult to justify, especially for subjects with rapidly changing content materials, where the resource will only remain current for a comparatively short period of time. This line of reasoning is supported by Kalyuga’s (2000) assertion that ‘...[c]ost effectiveness also represents a significant concern considering the expenses involved in producing many multimedia presentations’ (Kalyuga 2000:para.1).
- Small (and even medium-sized) schools and training organisations can rarely afford the significant cost of a professional multimedia team. The employment of in-house multimedia staff is generally out of the question and outsourcing can cause difficulties including a reduction of a feeling of ‘ownership’, as well as the very real issues of intellectual property and copyright.
- Learning materials and resources can lose currency quickly, making it problematic to justify a large portion of a resource budget on the creation of expensive, short-term resources.
- Teacher/trainers retain a positive sense of ownership of a resource that they have created themselves, and are more likely to use such multimedia within their

learning environments.

- Complex and high-order multimedia presentations can sometimes have a detrimental effect on learning. Kalyuga (2000) notes '...too many elements of information may overwhelm working memory, decreasing the effectiveness of instruction' (Kalyuga 2000:para 4). The simplicity of straightforward multimedia learning objects, created by academic and support staff, can be of benefit in these circumstances.
- Learning resources constructed in a timely manner by teacher/trainers and support staff can be aligned according to the needs of specific individuals and classes. There is little need to create for 'the masses' or for a perceived future need, both of which may result in a resource, which does not align well with learner/worker preferences.
- Learners/workers can be encouraged and taught to produce their own materials, expressing creativity and developing a sense of ownership, which is likely to lead to an engaging and motivating learning environment.
- Technology is often viewed as a mere auxiliary aid to learning, despite the fact that the use of computers is a fundamental employability skill. Stoney and Oliver (1999) concur with this view when they write '...in spite of there being many thousands of computers in universities, they are mainly used as a supplementary learning tool rather than as a primary learning tool' (Stoney & Oliver 1999:para. 2).
- If teaching staff demonstrate that they are extremely comfortable with the use of technology by providing an abundance of individualised, technology-based learning situations, this is bound to have a convincing influence on their students. The students will not only gain confidence in the use of technology, thus improving their own employability skills, but the teaching staff themselves are presenting an explicit and positive role-model - that technology should be part of study, part of employment and part of life.
- Encouraging teaching staff to expand their technological capabilities concerning the creation of multimedia learning objects for their learners/workers, is likely to boost their self-confidence in the use of technology and therefore increase the use of that technology in their teaching/training practice. Chapuis (2003) notes:

Accessing and applying learning objects into our curricula could be the catalyst for teachers to integrate a broader array of other technologies into their classroom practice (Chapuis 2003:8).

## Points Which Contradict This View

In the interests of even-handedness, the following points oppose the earlier views, and may be, sometimes, quoted by those who wish to keep the creation of multimedia entirely out of the hands of teachers/trainers:

- only experts in technology can produce high quality multimedia
- schools and training organisations commonly require a 'branding' which is not generally achievable by teachers/trainers and support staff
- learning materials with an amateur appearance may reduce learner/worker confidence in the learning environment, and the teaching/training organisation
- a professional resource which has been carefully linked with the curricular or training plan requirements may offer a better learning experience for learners/workers
- a multimedia team can ensure quality and professionalism
- learners/workers (particularly youth) come to the learning environment with long experience of high-class video game quality, and their expectations may be such that they do not tolerate amateur-quality multimedia.

For every one of these points there exists an opposing argument, which is not only based on the author's own 'real-work' experience and practice, but is supported by others. Wild et al (1994) for example, hold a somewhat pessimistic view on the prudence of the belief that all multimedia productions need to be large-scale, asserting that '...there has been a tendency for multimedia products to be big in concept, in design, in the amount of information conveyed' (Wild et al 1994: para. 6), and that '...when we get multimedia wrong, we often get it badly wrong' (Oliver 1994, cited in Wild et al 1994:para.5).

The need for high-level multimedia applications for broad educational use is also seriously questioned by Kahn (no date) who argues from the ethical perspective of accessibility and equality for all learners/workers.

The efficiency of multimedia in online training can also be measured by evaluating the bandwidth...but an online training course must be designed and developed for all individuals, not just the ones with quicker connections (Kahn no date:3)

Dickinson (in Wild et al 1994) agrees that teachers/trainers are more than capable of creating multimedia resources when provided with adequate instruction and support, and indeed argues that this can offer far-reaching benefits for the learning environment.

When teachers (trainers) are provided with the opportunities to do things with computers that cannot be done conveniently and cost-effectively any other way, then computers and their software will begin to carve niches in the school curricula. (Dickinson1994, cited in Wild et al 1994: Part 4, para. 16) My addition in brackets.

The belief that all learners/workers, particularly youth from the 'X-box generation' demand high-quality resources is questionable Chapuis (2003) when studying learner/worker reaction to teacher/trainer-created learning objects, found this belief unsubstantiated.

Even though as students of the 'electronic games generation', they have high expectations of software, they nevertheless demonstrated a high degree of

engagement with the learning objects and their visual elements. (Chapuis 2003:3)

## The Changing Role Of Teachers/Trainers

In the past, the roles of staff working within education and training were clearly defined. Teachers/trainers were engaged in the classroom, wholly occupied with the business of teaching learners/workers, both as a group and individually. Support staff were wholly engaged with the business of 'filling the gaps' of the learning experience, including the provision of additional support and supplementary learning resources as required. Technology teams and individuals were wholly engaged with the business of creating specialist resources to support the role of the teacher/trainer. These clearly defined roles are now beginning to blend and meld as functions and responsibilities change according to more flexible learning situations.

Education will become substantially more distributed across multiple persons and resources. Teaching will shift from emphasizing individuals who are fully responsible for learning in self-contained classrooms to distribution of teaching/expertise across teachers, disciplinary experts, and content resources. For teachers, there will be greater emphasis on skill in facilitating and coordinating learning experiences for individuals and groups of students. (Hawkins no date: para. 5)

Teachers/trainers now have an increasing number of roles including that of teacher, trainer, facilitator, instructional guide, coach, curriculum leader, mentor, content specialist, program supervisor and learning technologist. The steady shift toward more online learning is accelerating these changes, altering the teaching role even more acutely. Oliver (1999) describes four distinct areas of specific change. He proposes that the teacher/trainer initially changes from an instructor to a coach who is '...shouting advice from the sidelines' (Oliver 1999, para.11). Secondly, the teacher/trainer becomes a learning designer, spending an increased amount of time planning engaging learning activities. Oliver also suggests that teacher/trainers need to progressively teach for outcomes, considering how the skills and knowledge will be used in the future rather than for the academic exercise. Finally, this same outcomes-oriented approach means that the teacher/trainer must consider a variety of assessment strategies – perhaps requiring more variation and innovation than in the past.

Hawkins (no date) notes:

Teachers new roles create new demands on them in managing a productive learning environment. Teachers are now being asked to be facilitators or coordinators of their classes of students who are working independently as individuals or small collaborative groups on different projects. (Hawkins no date:para.18)

To deal with these increased demands, teacher/trainers need to acquire skill sets which will enable them to develop innovative learning and assessment tools and resources, in order to meet the needs of their individual learners/workers in an immediate, efficient and timely manner.

## The Changing Face Of Multimedia

[T]echnological change is not additive; it is ecological. A new technology does not merely add something; it changes everything (Leamnsion 2001, citing Postman 1992: para.16).

Technology is rushing forward at an astonishing rate, and with each new innovation, the field of education and training seeks to incorporate the revolutions and transformations into a teaching/learning/work context. Leamnsion states, '...[t]he oldest technologies were all at one time new' (Leamnsion 2001:para.16), *and* this is no truer than with educational multimedia. Times have changed and multimedia is becoming increasingly accessible to ordinary people, due to a growing appreciation of the principles of learning objects – the creation of small 'chunks' of technology-based learning.

It is best to view a learning object as a tangible resource produced by bringing together subject knowledge and pedagogical expertise in a digital form (Chapuis 2003:2).

This revolution in resource creation means that multimedia no longer needs to be a major project undertaken by professionals, but can be a single learning object such as a simple digital story incorporating graphics, music and audio, something which is well within the capability of teachers/trainers.

Teachers would find it a tall order to write their own textbooks or readers for a unit of work. Similarly, for some teachers it could be argued that developing their own multimedia digital resources is time consuming and out of the range of their experience. However, learning objects by their very nature enable teachers to be bold and experimental in either developing their own or customising those from a databank to their own purposes (Chapuis 2003:2).

In these new times, there is increasing access to templates and guidelines which provide support when first embarking on the creation of multimedia resources as a layperson, or when timeframes are short. Recognition of this contemporary way of working is evident in the increasing number of platforms available to support the creation and storage of reusable learning objects. By cataloguing and storing learning objects created by teacher/trainers and support staff, the capacity exists for these same teacher/trainers and support staff to 'borrow' the handiwork of their colleagues and make them available to their learners/workers at very short notice, in either their original form or with modifications required by the specific learning situation, class or individual. In this case, the modified resource can be added to the 'bank' for future use, thus adding to the quantity of learning objects available.

An experienced teacher is able to monitor the understanding of the learner very closely...and adapt his or her instructional strategy as appropriate. With careful design and a sufficiently large database, IMM [interactive multimedia] can be produced which adapts to the user's individual needs and interests (Kennedy & McNaught 1997:para.29). My addition in brackets.

## Enablers

While it is a broad and, perhaps, bold statement to maintain that teachers/trainers and support staff are capable of creating their own multimedia tools and resources, it is obvious that there is a requirement for professional development and other support to enable teacher/trainers and support staff to improve their skills. The author's experience has demonstrated this is achievable, and Phillips (1994) appears to support this view when he states:

The emerging technology has enabled many teacher/trainers and academics to produce their own multimedia materials, either on their own or in small teams with support groups (Phillips 1994, cited in Wild et al 1994: Part 2, para.1).

Hawkins (no date) broaches an important facet of this argument however when she points out that '...[n]ew models for professional development must address the critical transition issues for today's teachers to the vision of new roles for teachers' (Hawkins no date:para 37). To enable teachers/trainers to embrace, engage in and become skilled at creating multimedia objects for their learners/workers requires a more contemporary approach to the traditional model of staff development, and this is an oversight often made by management staff who decree the running of 'staff development sessions' in the belief that this is all that is required to encourage the adoption of new skills and for teachers/trainers to change their entire perspective of their roles. Roder & Williams (2003) cite several writers who also advocate an individualistic and unique approach

Current literature has indicated that professional development tends to be shaped at a management level rather than around the immediate needs of individual staff (Harris, 2000). Essentially, a 'one size fits all' mentality has prevailed (Willis, 2002). It is also evident in the professional development literature, that professional development must be based on actual practice and initiated by staff themselves, based on their own individual needs (Darling Hammond, 1999) (Roder & Williams 2003:12).

An organisation which boasts of teaching/training and support staff competently creating and using self-created multimedia tools with learners/workers, has adopted a progressive approach to changing the culture of the organisation, and provided the necessary support to staff, to enable them to implement new skills, knowledge and understanding of their transformed roles. While workshops to teach and practice new skills can still be important, other enablers are extremely effective eg. one on one support from mentors, an organisational cultural environment which provides support and encouragement, time allowed for development of the skills and ongoing preparation of resources, management support and encouragement, as well as the opportunity for sharing of expertise and experience in a community of practice.

They [communities of practice] can steward competencies to keep the organization at the cutting edge. Members of these groups discuss novel ideas, work together on problems, and keep up with developments inside and outside a firm. When a community commits to being on the forefront of a field, members distribute responsibility for keeping up with or pushing new developments (Wenger 1998:para. 23). My addition in brackets.

Entities such as communities of practice can enhance the take up of new multimedia skills amongst teacher/trainers in an organisation, encouraging and supporting rapid development of new knowledge between staff and providing an ideal environment to foster ongoing change and progress.

## Multimedia Tools

There exists a plethora of tools and resources, accessible to 'ordinary' teachers/trainers and support staff (ie. those without specific multimedia skills), all of which will enable them to produce more than adequate multimedia learning resources for their learners/workers. Many can be used in their entirety, or combined to make a multi-faceted resource. Many incorporate multimedia learning objects which can be 'dismantled' and customised according to need. Often these tools may not be multimedia in their original form, however it is generally within the capacity of teachers/trainers to add other elements (eg. audio, video etc) in order to construct a multimedia learning object. These tools include Toolboxes, web quests, quandries, online role play simulations, puzzles and quizzes, 'Do it Yourself' websites, podcasting, digital storytelling, interactive PowerPoint presentations, vlogging and audioblogging. (For details see Useful Links section to follow.)

Provided that initial guidance and assistance is offered in a supportive and encouraging environment as explained previously, the previously mentioned tools (and many more) can all be readily utilised by teachers/trainers to create multimedia learning objects, in a relatively short timeframe, and with considerable success. McTigue et al (1995) has found this effort and enthusiasm is generally valued by learners/workers.

[S]tudents perceive that teachers and lecturers who make an effort to make their subject more interesting, more accessible and more enjoyable by using IMM [interactive multimedia] are respected and appreciated for their efforts (McTigue et al 1995, cited in Kennedy & McNaught 1997: para.24) My addition in brackets.

## Conclusion

The concept of teacher/trainer-created multimedia was initially introduced supporting and contradictory views were outlined The issues of change were addressed, including both the changing role of the teacher/trainer and the changing face of multimedia itself. Finally, various means of assisting teacher/trainers and support staff to transform traditional roles, was discussed and a number of currently available tools, which provide uncomplicated instruments for multimedia development, were described.

The author opposed the view that all multimedia production requires a team of trained professionals, as the belief exists that this stance can lead to a disheartening situation, where schools' and training organisations' personnel feel that the acquisition of multimedia-based learning resources for their learners/workers is out of their reach. On the contrary, there is growing body of qualitative evidence, which suggests that when simple multimedia tools are made available to teacher/trainers, great excitement and huge changes can emerge. The following excerpt from an online forum, moderated by the author, provides evidence to support the stance taken:

Wow, I have taken a moment to stop and reflect back on the past, particularly our old method of delivery, and now realise how boring that must have been. Now, we are moving so fast with new delivery ideas and looking at providing loan laptops for external students [learners/workers] to allow them easy access. This is from someone who refused to adopt and adapt changes not that long ago! (M. Bullock 2005, pers. comm., 25 July) (My addition in brackets).

The animation and excitement in this posting is self-evident, indicating a high level of self-satisfaction and renewed enthusiasm for the teaching role. When teachers/trainers discover that they can become proficient in these new skills, their self-esteem is boosted and energy for teaching/training renewed. Learners/workers also gain considerable advantage as they reap the benefit of 'made to order' multimedia learning resources, which provide a more motivating and interesting learning experience.

Skilled staff, with energy and enthusiasm for their work, who are capable of creating low cost resources, bring both financial and productivity benefits to the organisation. There are likewise, significant benefits for multimedia teams, as without the need to discontinue their important work, to generate small resources on tight time-frames, they are free to concentrate on the professional creation of high-level multimedia resources for long-term, extensive use.

The overall benefits of relevance, immediacy, engagement & cost efficiency provide an argument difficult to ignore.

## Useful Links

### Toolboxes

Toolboxes are essentially metaphoric learning environments created through the Australian Flexible Learning Framework. While a professionally created multimedia resource, they can be easily customised and 'dismantled' enabling teachers/trainers and support staff to tailor them for individual learning situations. The individual learning objects can also be downloaded at no cost. ([www.flexiblelearning.net.au/toolbox](http://www.flexiblelearning.net.au/toolbox))

### Webquests

A webquest is '...[a]n inquiry-oriented activity in which most or all of the information used by students is online. By providing links necessary to complete the quest, the student is able to focus on the material rather than spend time looking for it. The five-part WebQuest (Introduction, Task, Resources, Process, Evaluation, and Conclusion) promotes critical thinking at the levels of analysis, synthesis and evaluation (NETnet Distance Learning College Glossary, The Northeast Texas Consortium, 2002). While not necessarily multimedia, webquests can incorporate audio and video to become a multimedia resource. Examples of webquests can be found at <http://www.webquest.org>

## Quandaries

Quandary is an application for creating Web-based Action Mazes. An Action Maze is a kind of interactive case-study; the user is presented with a situation, and a number of choices as to a course of action to deal with it (Arneil and Holmes 2003-5:para.1).

Some examples of quandaries can be found at

[http://www.halfbakedsoftware.com/quandary\\_tutorials\\_examples.php](http://www.halfbakedsoftware.com/quandary_tutorials_examples.php)

## Online Role Play Simulation

Fablusi is one example of a software package, which creates online role plays.

([www.fablusi.com](http://www.fablusi.com)) Further information and articles about this software can be found

<http://www.roleplaysim.org/papers/default.asp?Topic=toc5> and an example of an online

role play in an educational context can be found at

[http://www.users.on.net/~katef/unpredictability/needlestick\\_login.htm](http://www.users.on.net/~katef/unpredictability/needlestick_login.htm)

## Puzzles & Quizzes

These abound on the internet, and an example is Quiz Center. Quiz Center is a tool which can be used to create, administer and grade quizzes online. Without any Web development background whatsoever, it is possible to create online quizzes that provide instant feedback for teachers/trainers and learners/workers and these objects can be incorporated into other resources to create multi-faceted learning experiences. Quiz Centre can be found at <http://school.discovery.com/quizcenter/quizcenter.html>

## 'Do it Yourself' Websites

Teaching, training and support staff are generally very surprised that they do not need a high level of technical skill to create a simple website which can be used to 'store' resources for their learners/workers. An example is Tripod which can be accessed at [www.tripod.com](http://www.tripod.com)

## Podcasting

Podcasting entails audio content that is delivered via an RSS feed presenting a downloadable or streaming file (often mp3) (RSSToolChest.com 2005).

Examples of educational podcasts are available from

[http://science.nasa.gov/headlines/y2005/21mar\\_podcast.htm](http://science.nasa.gov/headlines/y2005/21mar_podcast.htm)

## Digital Storytelling

Digital storytelling is a method of using digital photographs and video to create short digital films. A simple digital story can be created using Photostory 3, available (free) from

<http://www.microsoft.com/windowsxp/using/digitalphotography/photostory/default.msp>

Examples of Digital Storytelling in an educational context are also readily available at:

<http://www.coe.uh.edu/digital-storytelling/examples.htm> and a Digital Storytelling

Network exists for those who would like to communicate with others using this technology at <http://www.groups.edna.edu.au/course/view.php?id=107>

## Interactive PowerPoint

PowerPoint is no longer just a visual tool to supplement lecture; it's a multimedia authoring platform for both teacher-centric and student-centric instructional activities. Students now have the capability to create rich standalone mastery projects that showcase their competence in specific instructional content, while teachers are better able to generate engaging learning aids that require students to do much more than just sit and listen (Coastal Carolina University College of Education, 2003:para. 3).

Examples and templates for the creation of interactive PowerPoint are available from <http://www.coastal.edu/education/ti/interactiveppt.html> and also from <http://www.lttechno.com/links/powerpoint.html>

## Vidblogging & Audio blogging

A blog is simply an online journal. However the addition of audio and/or video transforms this simple technology into multimedia. Examples of vidblogs can be viewed at [www.vidblogs.com](http://www.vidblogs.com) and a colleague of the author has posted audio blogs here <http://npaudio.blogspot.com/>

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