European Collaborate Innovation Centres for Broadband Media Service

University of Stavanger

PDF - a new breed of e-learning?

CASE STUDY

By NettOp, the University of Stavanger's department for e-learning

EUROPEAN UNION
European Regional Development Fund

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The Interreg IVB North Sea Region Programme

CONTENTS

1.0 Executive summary 3
2.0 Background 4
3.0 What is a PDF? 6
3.1 Adobe Reader, the most comprehensive program for reading PDF files 6
4.0 Interactivity 9
5.0 Graphic and pedagogic design 13
5.1 Pedagogic design concerns 13
5.2 Graphic design concerns: designing a graphic profile and structuring the 'product' 16
6.0 Evaluation: reflection upon experiences and ideas for further development for the project. 19
6.1 Technical lessons learnt 19
6.2 The transition to mobile platforms 20
6.3 Analysis of the project: report from the University of Nottingham, UK 21

This publication is written by:
Karsten Tillerli - Production manager, NettOp
Joanne Teresa Kleppe - Pedagogic designer, NettOp
Petter Mordt - Flash Developer, NettOp
Anne Siv Sivertsen - Mac Operator, NettOp (freelance)

Translation and editing - Joanne Teresa Kleppe

If you have any queries about interactive PDF production, do not hesitate to take contact with us:

Karsten Tillerli - karsten.tillerli@uis.no
Joanne Teresa Kleppe - joanne.t.kleppe@uis.no
Petter Mordt - petter.mordt@uis.no

You can also check out our presence on itunes U, just search for University of Stavanger.

To view this PDF successfully with all flash content, you will need the latest version of Adobe Reader and Flash Player. You can download these at the Adobe website free of charge.

1.0 Executive summary

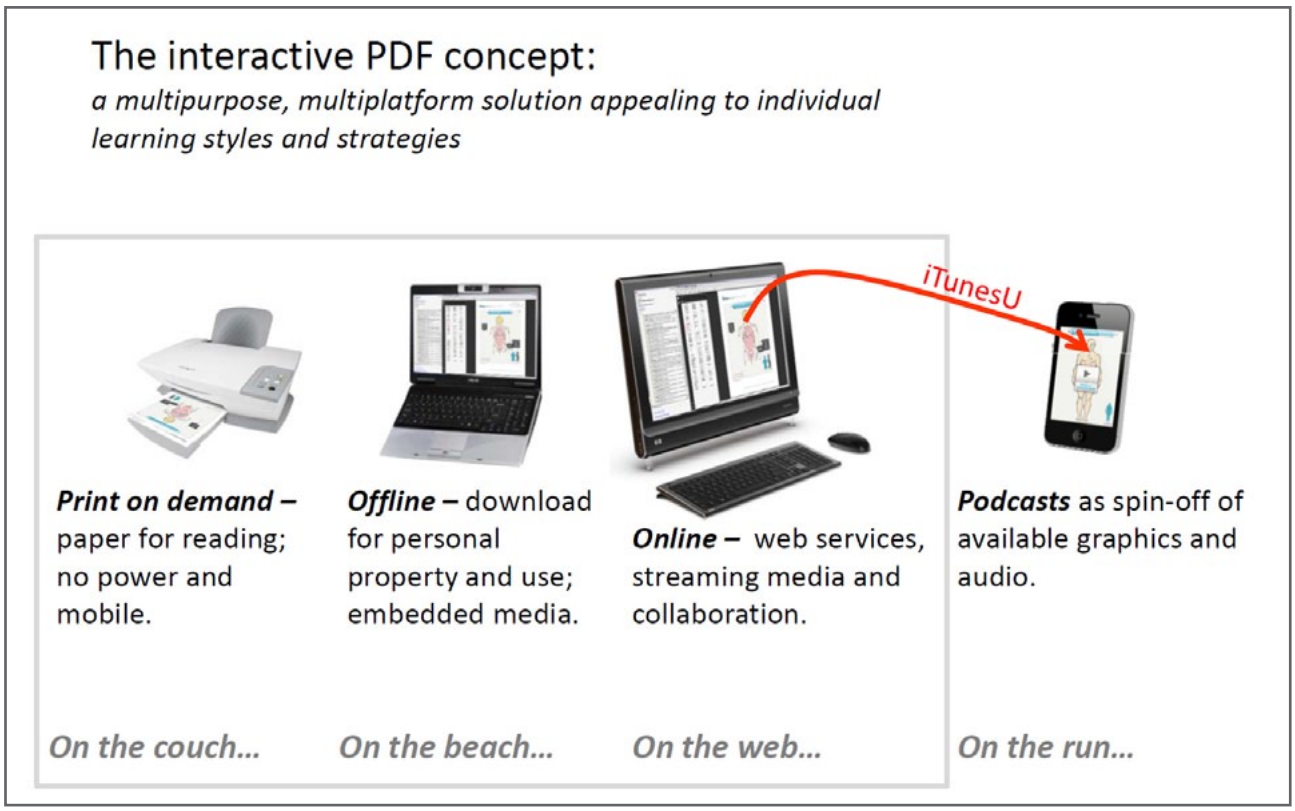
The University of Stavanger initiated work to develop a digital learning tool for the Bachelor in nursing studies, in response to the focus strategy for developing digital support for long distance learners (which ultimately full time students also would benefit from) at the Institute for Health Studies, UiS. This was funded in part by Norway Opening Universities, from whom we received a grant for development of our concept for academic interactive PDFs.

Choosing to make interactive PDFs meant that it was a natural choice to adopt Adobe Reader as the default presentation platform software with which to view our content. This was highly advantageous as the software has been developed (tried and tested) for many years, and continues to be developed upon to provide the user with ever increasing tools and possibilities for treating text, reading text and navigating documents (plus a whole host of other tools). This initial choice would give the students the benefit of all the inbuilt tools inherent to the program, enabling them to work actively and effectively with our content. This meant that we gained a lot of functionality packed around our own content, without having to 'reinvent the wheel' and attempt to program similar tools in our own content. If it already works so well in Adobe Reader, which is a free to download program available for all operating systems, then why try to emulate this within our solution: we were to work with the Adobe software, not try to make our own.

There are several ways of incorporating interactive media in the PDF files, but our conclusion was that linking by utilising Adobe InDesign and publishing to Adobe Reader, this would without doubt be the smoothest and most functional approach to the project. Adobe InDesign was also being developed to enable designers create new file formats with dynamic interactivity.

In a nutshell, the concept of this project is that by utilising the new advancements in Adobe InDesign and Adobe Flash programs and publishing a PDF via Adobe Reader, one can make a text based document which also contains bespoke, media rich interactive elements, plus benefit from all the navigational and text based tools of the workspace within Adobe Reader. All text, image, media and interactivity is seamlessly integrated in one place. In this way, an academic text can be combined with e-learning, sound and film to resemble an e-learning course or website-style solution, whilst remaining a print friendly text-heavy document which can be designed in an academically appealing way.

There are several technical points to take into consideration when working with Adobe programs, (we use the Adobe Creative Suite package) since these programs are developed by the Adobe company, and are updated regularly. This means that certain functions can be subject to change or revision, since the company is constantly working to develop their software in ways which respond to current web and publishing demands. Certain functions may be omitted or new ones added without us knowing for sure if this will affect the work process we have established, since our concept is rather a 'niche' product. Most of the focus in the last three years has been to expand the software to make it easier to produce eBooks, and magazines for reading tablets such as the iPad. One plus side to the new developments is that publishing to iPad and other reader tablets is becoming a more fluid process, and will mean that we can easily transfer our project to mobile platforms should we wish to. Incorporating interactivity in PDFs has also become a more fluid and reliable process, but does not seem to be the main focus for development of the software. We do have the opportunity to take part in forums to try and suggest changes and development ideas for Adobe, however there are currently very few people making interactive PDFs in the way we have now.



The interactive PDF concept

2.0 Background

In 2008, the University of Stavanger started a project with the expressed aim to develop digital learning tools, and make a resource that would digitally support and complement the part time nursing bachelor degree course to span over 4 years. Since 2009, the university has successfully recruited students for the web based (distance learning) course each year. The development of digital learning tools for this course has continued progressively since the first recruitment year, with plans for the production and development of the digital learning to come to a close at the end of the year 2013.

The relatively short development time the project had at disposal from the time development started to the time the first students started their studies dictated that we needed an effective and smart way to produce the interactive content. In addition, there was a clear need to establish a working process that could enable the authors and copywriters involved in the project to be able to contribute in such a way that would require little or minimal training and prep work to keep production on track. The goal being to deliver digital learning on all subjects the course covered, parallel to the teaching plans for each semester.

The project requirements were to be able to combine text with a high level of interactive content which could enable the students to work effectively with the subject matter. The technical advancements in programs made by Adobe meant that use of PDF as a solution became a relevant and viable option in resolving a lot of problems and issues surrounding this project.

In 2009 and 2010, the University of Stavanger received a grant from Norway Opening Universities to develop and test a methodology for e-learning based upon the interactive PDF concept. This meant that the development of tools for the nursing bachelor could become more effective, and was a key factor in enabling the deadlines for the project to be more easily realised.

Parallel to receiving the funding from Norway Opening Universities, Adobe Creative Suite underwent an update and released version CS4 of the software package. With CS4, it was now possible to publish interactive media into a PDF in a much more effective and trustworthy way, which consistently worked. At the same time, Adobe Reader version 8 was also released, which made it possible for students to personalise their PDF´s with more text editing tools and functionality for document organisation.

NettOp, the University of Stavanger's department for development of digital learning tools, has developed their own working process and methodology for publishing interactive, didactic PDF solutions. The department is organized under the direction of the director of the university, and produces film, sound, graphic design and illustration as a service body to the entire university. In addition to media and film competency, the department also has expertise within the fields of pedagogics, flash programming and journalism. NettOp has completed projects for university partners or research fellows, although this project was the first of its kind whereby NettOp was drafted in by the director himself to respond to a prioritized focus area for the development of courses at the Institute of Health. There are currently 7 full time permanent employees in NettOp, in addition to frequently hired freelancers and consultants in order to meet the large demand for digital work that has increased throughout the past 10 years.

The aim of this report is to give some insight into the process surrounding production of interactive PDF´s, and give some idea as to how we have structured our work in a pedagogical way. We will therefore also make the InDesign document to this report available so that ECLIC readers can see firsthand how this document was made under the same basic principle as our series for the nursing bachelor degree – so they can study the file in Adobe InDesign firsthand.

This report will not be a complete A-Z user guide for complete production of digital learning tools in an interactive PDF form, but will give some kind of guide as to which resources, expertise and processes are required for this type of production. You can always take contact with one of the members of the NettOp team should you or your organisation like to know more.

3.0 What is a PDF?

PDF is a synonym for Portable Document Format, a platform independent open standard document (ISO 32000-1:2008). This means that you can open this file type in all sorts of file reading plug-ins and software like preview, notes, word, or adobe reader for example. Adobe Reader is perhaps the most comprehensive PDF reader, with a unique collection of text, navigation and reading tools, allowing the reader to tailor their experience of the document and thus allow their work to become more effective. Adobe reader can be downloaded free from the Adobe website, and is not reliant on a web browser. As far as we know it can be used in all operative systems and machines.

3.1 Adobe Reader, the most comprehensive program for reading PDF files

When you open a PDF file in Adobe Reader, there are a range of beneficial tools available. Here is a quick overview of functions and tools that Adobe Reader supports:

- Interactive functionality such as hyperlinks, flash, video and sound. Flash is a way of programming interactive content via Adobe Flash program. Flash elements could be an animation, a film placed in a frame with its own film player, or a multiple choice question or gaming element. The actual film type this is imported as in InDesign is swf.

- The looks of the document are completely preserved from the original document, including page numbering and interactive contents page. All text, graphics, and pictures will retain their original quality and be scalable. (The images won´t be better than their original quality, so original quality is a key consideration).

- Print on demand: The student can select and print out the pages they want at the quality they see on the screen.

- Navigation in the PDF document is simple, and Adobe Reader gives the student clear and handy overview options for this - for example:

    - Page view margin: thumbnails picture of the pages in the entire document
    - Bookmarks margin: select rather an overview by text title
    - Scrolling throughout the pages
    - Use the arrow keys to flick through page for page
    - Type the page number you want in the page number box to jump to that page
    - Click on the interactive contents page to jump to the desired page

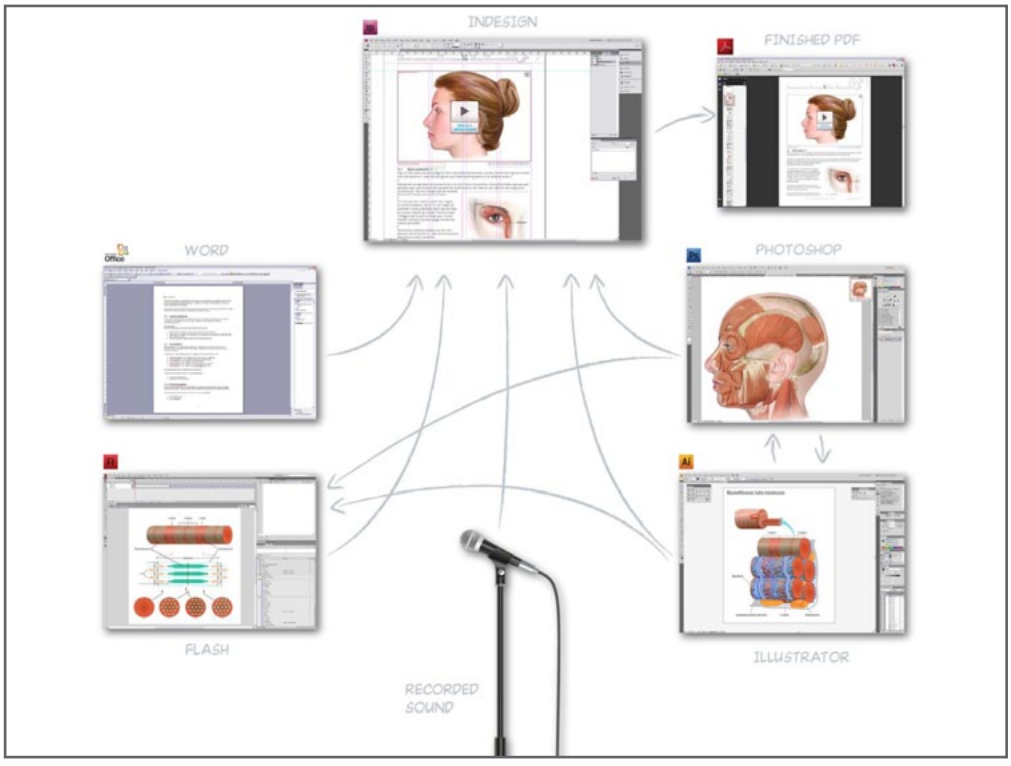
- Adobe Reader also has a range of text tools:

    - Highlighter tool for easy highlighting and marking of your text
    - Notes tool: add your own notes with the sticky note tool
    - Open the notes margin and create notes that way
    - Type tool: now available in Adobe Reader X: write directly into your document and get an overview of your comments.
    - Search function: an extremely handy tool to be able to search the immediate document you are in, or a series of similar PDF documents saved to your computer.

- Viewing options for enhanced reading experience:
    - Rotate page direction
    - Zoom in (enlarge the text)
    - Double page reading: imitating a book
    - Read modus: for uninterrupted space
    - Full screen modus: for absolute uninterrupted reading space. One can also set page transitions on a file (from InDesign) so that when you click (either with arrows or mouse) you get different page turn effects; fade between pages, slide between pages for example, or, you can set the page transitions to look like a real page turning, which is especially fun if you design a double page spread magazine style file (although this option is only viewable in a net browser, not in Adobe Reader itself.)
    - PDF files are downloaded locally to the students' machine; once the file has been downloaded they are then able to work on the document offline (the file will not require internet access to function). If however, you make a magazine solution with page turns like a magazine, this will be reliant on the internet to show. That option will not run directly in Adobe Reader. Likewise, if you have someone code SCORM tracking via your flash elements, you will need access to the internet to be able to run this kind of solution. We have not tested this option yet.
- Password protection: you can set up the document to only be accessed with use of a password, if this is desirable for you. There are also safety limitations you can set, so that not only can you limit who can open the file, but you can also limit who can copy the file, copy parts of the content, or even print out the document.
- Changing of safety settings (password for further access rights)
    - If you make the file with safety restrictions and an entry password, then you should set the document with two different passwords for gaining access to the different functions (opening the file, changing safety restrictions within the file). If a file is opened with one password for accessibility, all safety restrictions will be temporarily lifted.

In addition to these functions, Adobe Reader also has several other practical advantages which make it easy for the student to work actively within the document. Some of these functions are summarised in the following sections.

Adobe Captivate film to show how some of the interactive features work in the PDF within Adobe Reader, this will automatically start. Use the control panel to pause or replay.



Production line of interactive PDF's

4.0 Interactivity

Since Adobe software has been the primary software used at NettOp, it was therefore an easy and natural choice for NettOp to use Adobe Flash as a development tool to make the interactive elements in for the PDF concept. NettOp has a long history as a department for making bespoke game based solutions, e-learning courses and elements programmed in flash.

What do we mean by interactivity in this context?

- Being able to navigate in a document in multiple ways and do things with the text like highlight it and adding your own notes in Adobe Reader is one kind of interactivity.

- Using Flash elements as interactive content:

    - Game solutions: whereby the student must participate in a task and think about what he/she will answer e.g multiple choice quizes, memory games interactive illustrations, crossword puzzles are good examples of these
    - image galleries and flash cards: can act as good memory devices
    - film and animation: are relatively passive - but can help stimulate understanding and memorisation since they incopororate sound and moving image.
    - simulation games: based upon the principle that 'we learn by doing' creating a digital environment whereby a student can experiment with variables in a simulative way is a good device for trial and error testing and effective learning of cause and effect

Different ways of learning will appeal to different individuals - some may thrive by reading text, some by hearing a text read and some by seeing a film about the text - the majority of us will most likely benefit from a combination of these approaches.

- Pedagogical devices for interactivity can include

    - peppering the text with study questions or questions for reflection and further investigation/self study
    - presenting an example case study, or providing analogies - simple flash elements such as an image sequence with a voice over, or an illustration depicting an analogy to explain something complex
    - structuring your content so as to break it down into bitesize sections and giving a clear overview of processes
    - providing tips or related points in their own box - this provides both visual and cognitive break
    - providing a graphic representation of the theme covered in the text (flow chart/ mind map for example) to illustrate the theory visually
    - pictoral illustrations for key themes: use illustrations where something is complex and needs further explanation.

    - Often interactive content is a combination of the above, and can help to explain something quickly that otherwise may require a large passage of text when explained in a traditional verbal way.

There are two ways to embed multimedia content into a PDF, either by placing or coding elements into the file via Adobe Acrobat, or by embedding content in to a normal book/brochure type document in the desktop publishing program, Adobe InDesign, and publishing as PDF out from InDesign to Adobe Acrobat/Reader. When we first started to explore the possibilities for interactive PDFs, we experimented with placing the interactive elements via Adobe Acrobat. The tools for placing flash components in Acrobat were somewhat crude and had their limitations, which proved only to deliver an inaccurate and inconsistent result. The solution in the end was the release of CS4, which occurred in 2008. With this update to the software, it was possible to organise all the elements that were to be embedded in the PDF InDesign document, and place all visual elements and sound in directly just as one places a picture in the desk top publishing program (InDesign) – therefore flash elements could be reliably embedded in the document in one smooth process and published as one step from InDesign to acrobat without need for any additional work.

One design consideration for NettOp was that the project complemented the platform it was to be opened in, ´packaging wise´. Another production consideration was to be consistent in the sizing of the templates for the interactive elements – to both make the production process simpler and help the students identify an interactive element compared to a normal illustration. We decided to limit ourselves to three basic sizes of flash templates for these and them put the bespoke interactive element in these templates. Sticking to the three basic sizes meant that during the production in InDesign, documents could be planned effectively - even if a developer was not finished with the object, the designer could still plan the layout as long as a plan was made for which of the three basic sizes the elemetn was going to be; the full page template, the half page template or the quarter page size template.

Planning with a good work flow in mind means that it is possible at least in some way to streamline production. We needed to try and streamline the process as much as possible wherever possible, since building this solution is a pretty manual thing, and there were many people involved in prodction, who all had to mesh their work together (see figure about our work process in the next chapter). Not many processes in this project could be automated, asides from making document templates and templates for the elements that were to go into the documents. Keeping things similar to traditional book or magazine production meant that the layout (placement of text, graphics, elements) had to be done manually for each document - avoiding automated production meant that we created a high quality feel, whilst taking advantage of all the ways InDesign could afford us a good work flow. Once we built up a catalogue of interactive elements, we could also reuse things and tweak things to make new elements quickly.

Some modifications to our plans were made as we started production. The template for the quarter page for example was dropped, as it was least used and least practical of the sizes when actually viewed in Adobe Reader. The aim with the template was that it should be simple with a frame (skin), place for a title, and help button. At a later stage, we decided to add a start button to the interactive elements, so that students would be able to control when they wanted to start the interaction, and we placed in a refresh button at the end of the elements so that the students could choose whether or not they wanted to play it again, without having to reload the entire page. We also included a basic control toolbar for pausing, playing and stopping animations or films.

Flash interactions are activated either by clicking on the interactive element (the space where the element is placed is activated upon clicking), or one can set the interaction to be activated upon page turn, as the student navigates the document. The latter option was chosen for several reasons:

- We avoided making a hop between a static image and the actual interactive element – something which created a ´hop´ between the two (a static image was initially used as a place holder for the interactive element, which was when clicked upon is replaced by the activated flash element – something that was not desirable – we also experienced bad quality of the static image just because it was layered with an interactive element)

- In addition to avoiding an awkward hop, we also wanted to activate the interactive elements upon page turn so that they would be ready and waiting, with a start button in their own template, upon which readers could identify that there was an interactive element to click upon already activated and ready to play further. In a solution where the interactive elements are already activated upon page turn, the reader does not have to press on the interactivity two times to make the animation, film or game actually start.

In the end we have managed to navigate through all the bugs and settings options so that flash elements consistently function well.

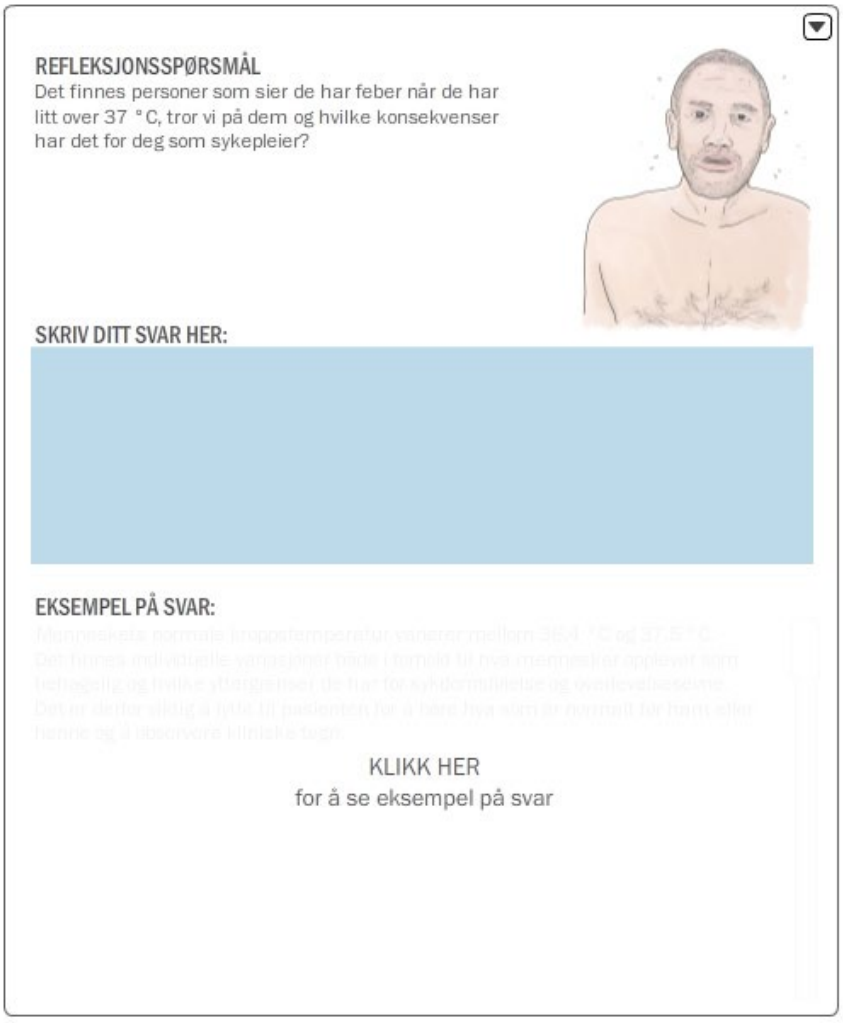


Figure: Example of a reflective study question, where the student can write their answer in a free text panel, and receive a model answer on demand.

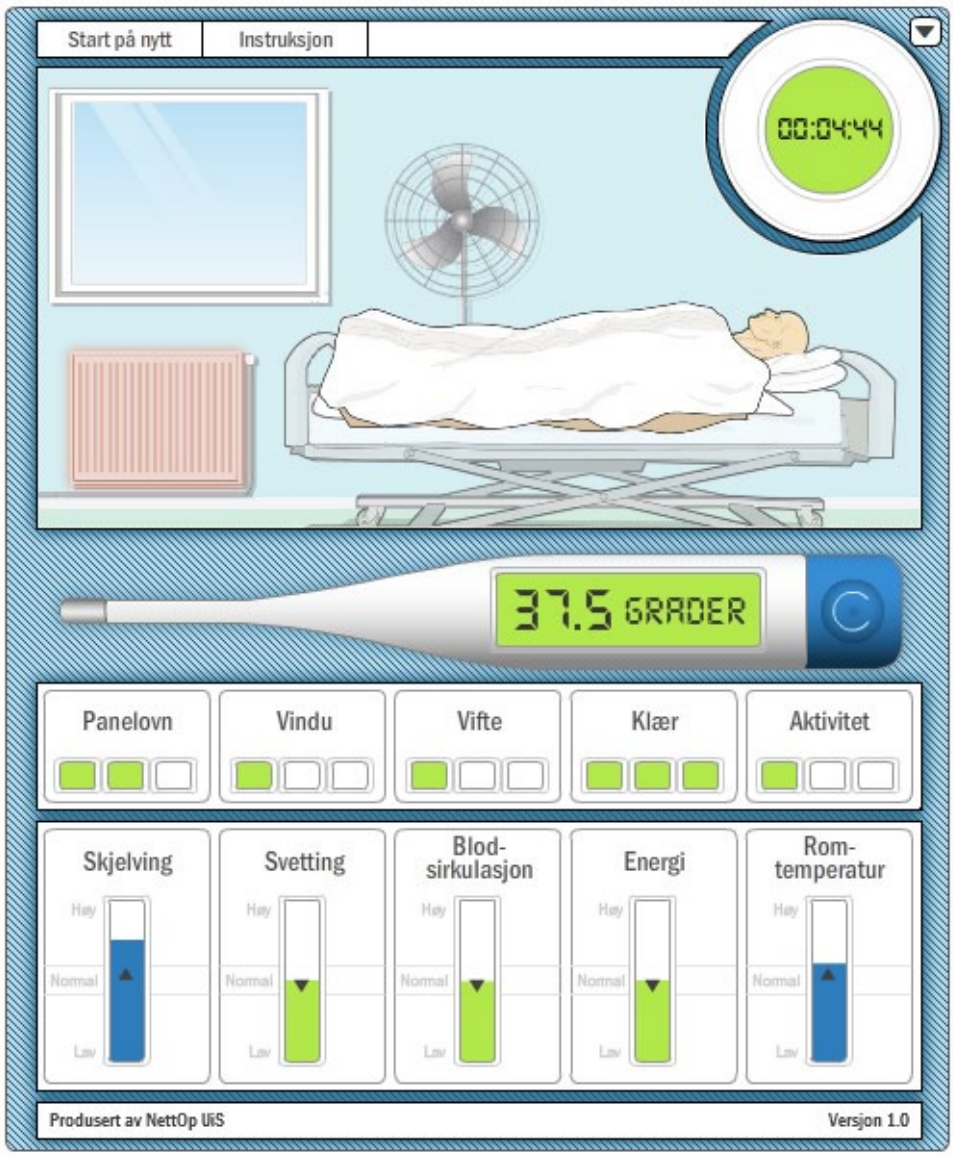
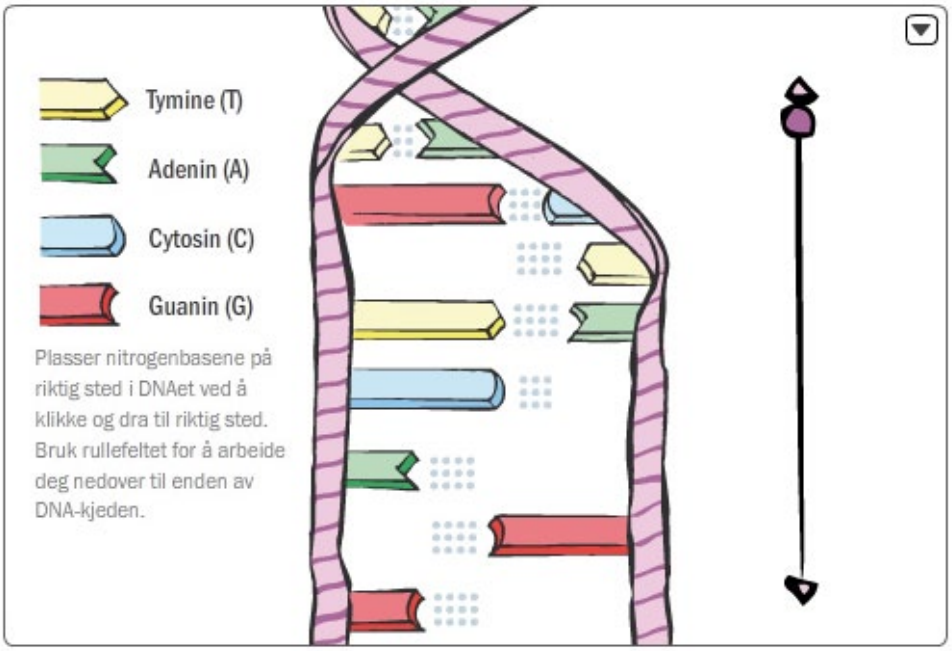


Figure: Example of a more complex simluation game, to teach nursing students about factors which affect temperature regulation of the patient. Below: an example of a simple game to match up nitrogenbases in a DNA strand



5.0 Graphic and pedagogic design

At the start of the project, the team at NettOp will often assess which specialist in the team is the right person to address either all or different parts of the brief and production requirements. In this case, we had a pedagogic designer with graphic design competency, who already had a sound knowledge of Adobe InDesign. Upon receiving the 'brief' to design an interactive PDF, it was the pedagogic designer therefore who started the process of discerning;

- what the target audiences (TA) needs where
- how to develop texts provided in a responsible, practical and pedagogical way
- what type of visual language will be appropriate regarding the background of the project and the TA (complete concept for graphic design – a graphic profile for the digital element of the course)
- what could lecturers offer and how could we best work together to make something new – a strategic work process model that was also worked on together with the team and production manager at NettOp

Research

At the beginning of any brief there will also be a process of research for the designer, to establish what already exists out there that is similar, in order to gauge a) what is possible and b) where will we pitch our product? When we took a look at other PDFs being made globally – in 2008 before tablet readers were marketed fully - there was a wave of popularity for e-subscriptions to PDF versions of paper publications primarily in for example the newspaper markets. We took a look at some of the big English newspapers PDF's to see how they looked and functioned, and what our criticisms might be, what we could learn and wish to achieve for our own PDF's and then had a think about what this meant for us. We did not in any sector of the market encounter interactive PDF's to the level of interactivity we wished to produce. So we started to test and sketch out dummy versions to find out how things worked.

5.1 Pedagogic design concerns

What are the target audiences (TA) needs?

- To be able to listen to course content
- To be able to repeat complex explanations until they understand it fully
- To be able to practice and play with the subject so they can understand it from a different angle than just a book or lecture could give them
- To be able to work offline and add their own study notes
- To have some useful hints and tips about the material they read about in the textbooks

- To be able to simulate exam questions, so they can revise effectively before an exam, and test themselves on what they have learnt (this also will reveal weaknesses, that they can work on)

- This PDF concept was provided as a tool for distance learners to replace lectures, but would not replace pensum litterature. The idea was that for these distance learners, they would be able to study the theoretical aspect of the course independently, so that when they do come to university for meetings and tuition this can be used more effectively for an active dialogue with tutors, discussing for example case studies which build upon the theory they have studied at home.

How could we develop texts in a responsible, practical and pedagogical way?

Firstly, we worked very closely with lecturers, who were briefed about what e-learning is and also the concept for the project that they would be providing material for. We expected them to deliver some kind of basic manuscript text on the subjects that they taught, and established that this was to be thought of as lecture notes – whereby any additional tips, pointers, study questions and connections would be appreciated and would greatly enhance the learners' experience. This was going to be definitely different for lecturers than preparing for a normal lecture or seminar.

We were met with some scepticism about the concern that this kind of product could be used to replace them, so our role also became to educate and coach lecturers through the process and try to explain what was required of them. A lot of time and energy has gone into establishing positive working relationships to ensure that the most important element of the interactive PDFs – the content itself – has been quality controlled, verified and written to some kind of basic key values/structure points that we ask everyone try to cover. Although this was met as a challenge, many lecturers have also been positive to realizing the value of making such an investment with their time for the quality and effectiveness of their own teaching. Once an interactive PDF has been made, we expect the shelf life of that PDF to be up to 5 years, with some small revisions underway if required. Subsequent 'editions' could also be easier to write once the first version was in use, and teachers can see how it works.

In short; work process with the lecturers and academics:

- Content is written as a manuscript that the lecturer submits to NettOp for analysis and development. It is also sent to a copyrighter who can edit and launder the language for grammatical mistakes or errors.

- The manuscript was written in a not too formal tone, so that it is presented as lecture notes from the lecturer – as a compendium – a gathering of academic notes with tips, pointers, study questions and e-learning elements to try and resolve some of the most difficult to understand themes - and most of what is covered in normal lectures.

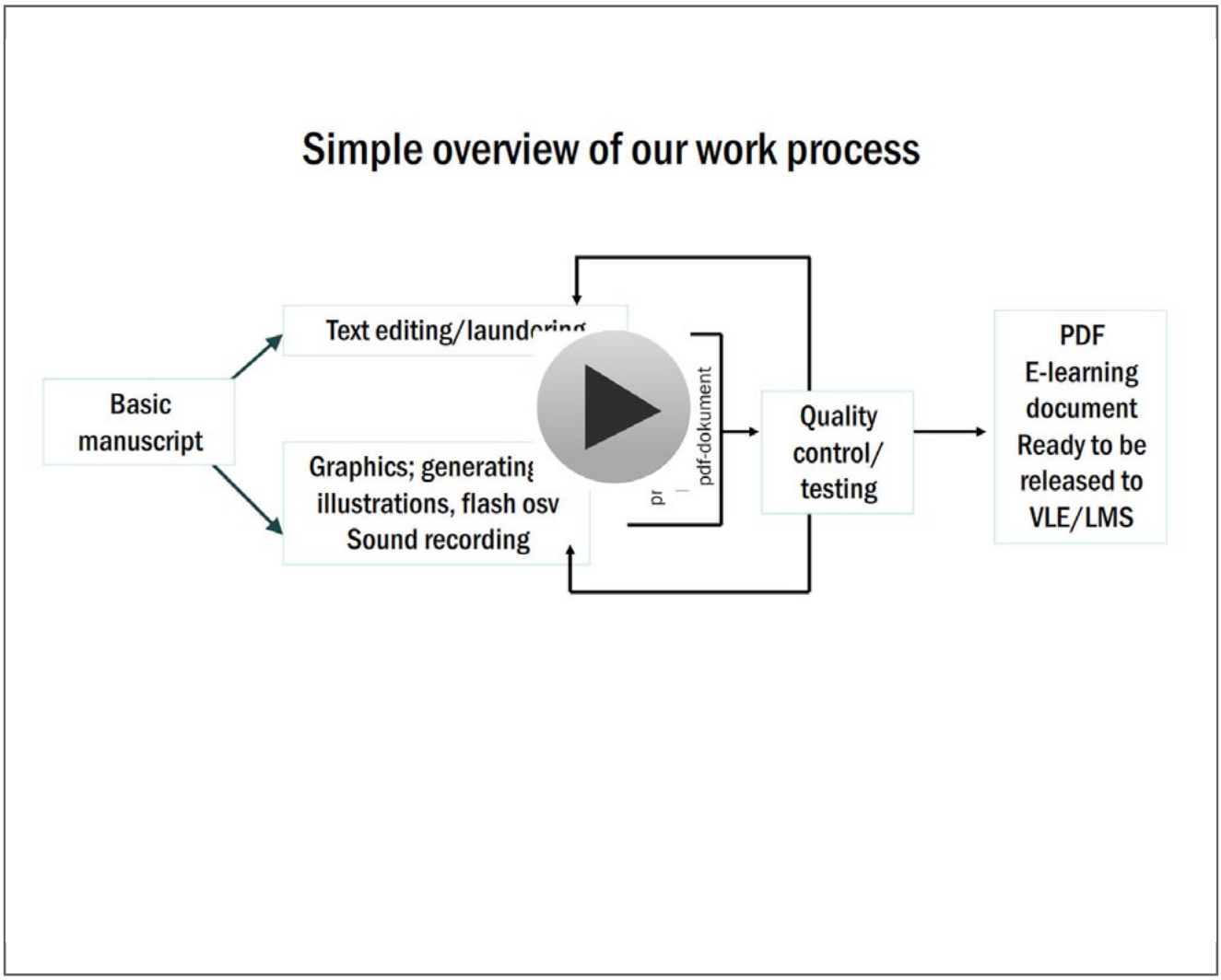
- A template for the manuscript was established to always include

    - An introduction
    - An outline of the learning aims for that PDF
    - Presentation of the topic in chapters with subtitle and under themes clearly organized

- A conclusion if necessary
- A multiple choice quiz and/ or study questions to reflect upon the content

We had team meetings internally at NettOp regularly, where we devised and revised how the work flow and processes were to function, assessing how the tasks of the project were to be delegated and what kind of development strategy we were to adopt. In the early stages of the project, most of the focus was on:

- engaging participating lecturers/ academics
- generating good content with them in a collaboration between them and a copywriter, and NettOp
- project managing everyone to keep on track with this phase of production (this may be a job for a department leader also, to organize contributors and production effectively. It is perhaps ideal that someone with an overview of the course steers this process.



Click on the image to start the powerpoint film, which shows an overview of our work process

5.2 Graphic design concerns: designing a graphic profile and structuring the 'product'

When a graphic designer sets about making a new profile for a product or service, there is a universal design process that must take place; one that considers all aspects of the visual language in relation to the TA and use of the final product. This includes trial and error testing and feedback on the following elements;

- Choosing and testing an appropriate font, considering readability and style appropriateness
- Testing different colour palettes for appropriateness to the subject matter, seeing them function in some kind of layout
- Designing a layout and template to put all the content in – like designing a book

We made the decisions about the design along the way, under the process of testing and development. Some of the key decisions we made for our project were:

- Format – we decided that the layout should be in portrait format so that it would be both easy to read, easy to print and resemble a normal book, as well as that portrait format works well in Adobe Reader, leaving space for toolbars and margins which can pop up in the program.
- Keeping the feel of a traditional book – we decided it was worth keeping elements that a text book would have like cover, info page, contents page and introduction etc. so that the PDFs would be recognizable as study texts, easy to navigate and including all the information anyone could possibly need, there is a certain legitimacy about keeping the production like a book – we are basically publishing a book-type solution (with benefits!)

We also made some key technical decisions:

- Making the effort to recording quality sound of the lecturers notes
- We found that students responded really well to being able to have sound, and this is relatively simple to produce, so we decided to make the recordings high quality so that that we could also reuse them as standalone podcasts (without being a PDF) We have since launched a highly successful range of podcasts from the series on iTunes U and have therefore successfully reused some of the resources made here.
- Flash elements worked best in the half size template, so we made more of these than the whole page template size

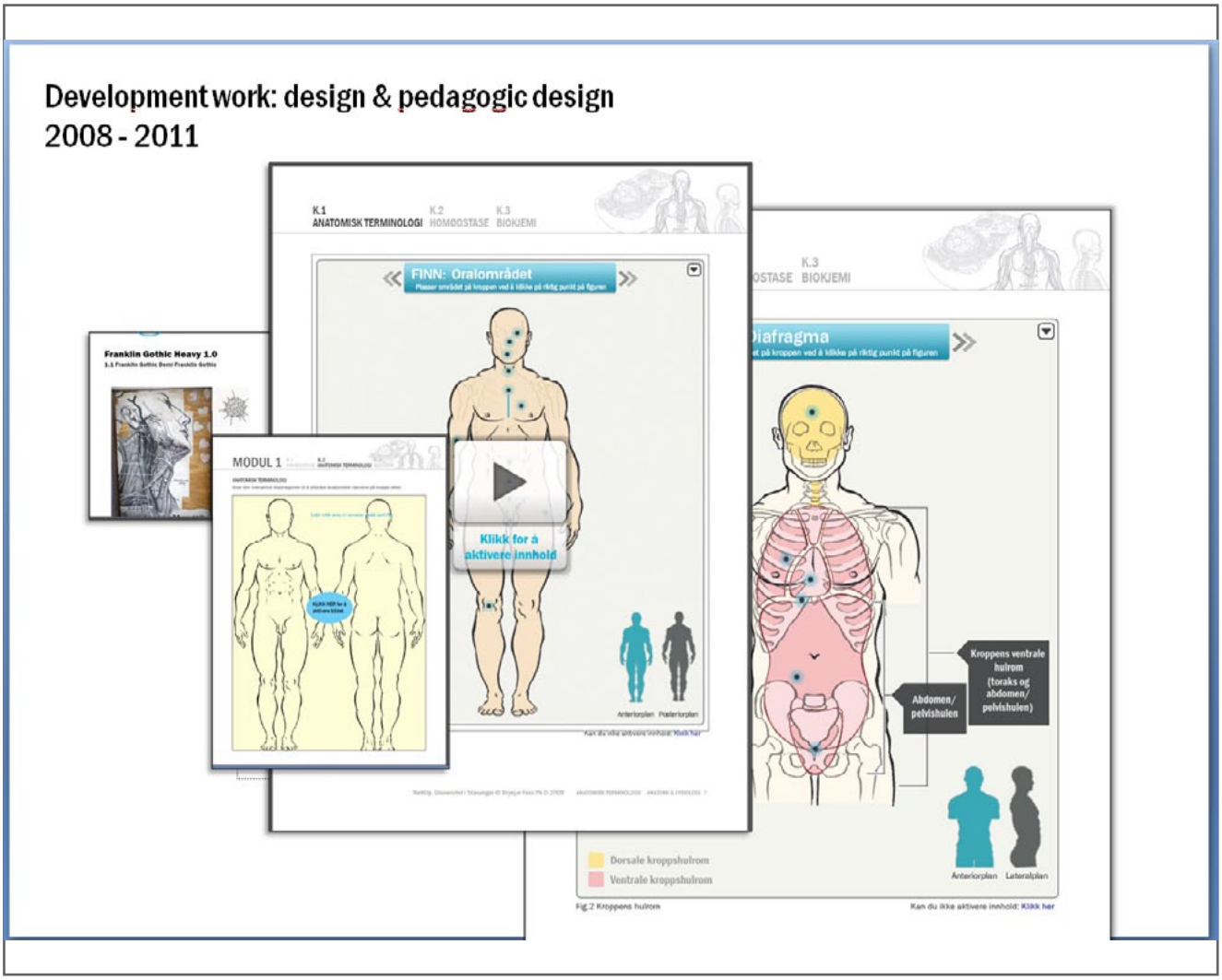
The layout/ template is based upon a grid, in the same way that magazines and books are made in InDesign. We open an InDesign template file, place the text in which automatically flows into the document creating new pages as it goes, and then we custom the layout as we put images, films, sound and interactivity into the document just as simply as placing images is as a process in InDesign. The colours we chose for the design reflect the nursing/hospital palette of soft greens and cool colours,

while we used a lot of grey tones for the fonts to enhance readership and reflect the Adobe look that the PDFs are viewed in. The font itself is a font family which was already in use by UiS, chosen here on the grounds that it has a clean, academic look and is easy to read. We have changed font sizes as we have developed the PDFS to be better for reading on screen rather than just in print. This means the font size is a little larger than normal books would be (13 or 14 pt).

A Step by step process was devised to establish the most effective way to place objects in the InDesign files, and to make it easier to delegate specific tasks between more than one employee at NettOp. It is important to establish a good work process and checklist when you are making a media rich product like this, as there are many elements that come together in InDesign to be published. Once the file has been checked to ensure that no step in the process is forgotten, all files are quality controlled for adhering to the overall design profile and functionality tested before we published the finished interactive PDF's to our VLE, It's Learning which is where we made the files available to students.

If you have any more questions about this process, NettOp can give a step by step break down of the process, which will be ideal for designers who are familiar with InDesign to take into use. If you are learning InDesign, try using Lynda.com and Adobe help features or the book series InDesign for dummies as a good introduction, although it is probably more time saving to hire a graphic designer for this, as you will need not only skills to use InDesign, but design knowledge to produce and maintain the graphic design profile.

We also have a technician at NettOp who has been available to answer questions for both students and lecturers about the PDFs on our VLE, should they experience any problems downloading or using the files. It is perhaps something to consider that the users of the product will be able to point out errors and things that need fixing, which is a useful resource to have- an open communication about the product and chances to evaluate the work are extremely important for gaining new ideas and thinking about future development!



Click on the image to activate a powerpoint film which shows an overview of our development and design work

6.0 Evaluation: reflection upon experiences and ideas for further development for the project.

6.1 Technical lessons learnt

The idea of combinining the two different worlds of an academic text book and media rich digital e-learning in one and the same document as an interactive PDF is a relatively unheard of concept. The academic text book notion is based upon being able to be printed on demand, feel and contain similar content to a text book, and the other world has a focus on a range of pedagogic interactive devices which come from the digital world. Attempting to make a new form of e-learning that bridges these two worlds has presented us with challenges - both not only with producing the content, but also with technical challenges and the fact that we have locked ourselves in a (pretty much one way) relationship with Adobe Software. We are entirely dependent upon Adobe continuing to develop their software in a way that supports the concept.

We cannot be assured that all tools remain conducive to what we want to make – we have no guarantee that Adobe may or may not decide to omit tools that we are heavily reliant on for this process - especially since there is a lot of focus on publishing for tablets in the ePub format at the moment. With updates on their software occurring about every 18 months, we have to adpat and learn with each revision in order to continue successful production. The PDFs we already have made however will continue to function in Adobe Reader, and the upgrades for this program are advantageous to our students. There are regrettably very few people (in fact none that we know of currently) who are working actively with this type of solution for education, something which means we have often had to use trial and error as a mainstay step in our work processes and find solutions to problems ourselves. There hasn´t always been any information on blogs or forums that we could turn to, and Adobe help lines and services have not always answered our queires sufficiently enough for what we do.

A couple of examples of this are;

- With update of Adobe Reader, we have discovered that we need to change our scaling settings in the flash elements. In an old version of Reader we didn't need to set them to scale, and in the new version we have had to set the flash object to scale because it doesn't cooperate automatically anymore. This means the objects scale as they should when you change the magnification of the PDF

- With CS5 the way to place sound files into the InDesign document completely changed, because of the addition of a whole new section of media and interactivity tools. This meant that instead of putting all our mp3´s into a flash template with our own design of control bar, we decided we could take advantage of the new possibility to place mp3 files directly into the document without our own controller skin. We reckoned that the default controller skin was quite similar to the one we had originally designed, although we still have scalability problems with the controller, it works fine (just looks different). This is one small sacrifice we thought was acceptable to make since it sped up production considerably.

We have also had to find ways of getting film to successfully operate within the PDFs, and have done this by making our own template skin in flash for film, and streaming the film from our own servers (our VLE had a file limitation, therefore we made the decision to stream the film from our own server instead of embedding the film directly into the PDF via InDesign.) The way this works is that the film is inside a flash template skin/player which is coded to 'communicate' to our server on demand. The student must be online for this to function, and will receive a note pop up if they are not online and cannot therefore access the film. This is one of the compromises we have made in order to maintain a total file size of under 38 megabytes, which is compliant for uploading to the VLE we use, and also handy for the students.

We have been able to solve these challenges with creative thinking and good knowledge of Adobe Flash and Adobe InDesign, and hope that the trend towards interactive documents will continue to include PDFs.

6.2 The transition to mobile platforms

We are aware of and sure that mobile platforms will be increasingly utilised in the future. We have started to test our PDF concept on reader tablets. Currently, it is fully possible for students to open any PDF on their iPad or Galaxy tablet (these are currently the two brands we have tested our PDF´s on) and are able to read the PDF sucessfully as a static eBook (without interaction or sound). This is because the file format of PDF is globally acceptable to all devices – which is pretty handy. If they want to hear the sound at the same time, they can download the podcasts we have made as a by product of the project.However, if we were to really take advantage of the format of the tablet, we would look to develop html solutions or use the Adobe Digital Publishing Suite (ADPS) perhaps for embedding sound, film and some limited interactivity in the solution; so that it could be experienced similarly to the way it can on a computer. We are currently testing ADPS for another unrelated project, and think that this may be a digital magazine publishing format for tablets that could be a good solution to use on for the future. ADPS is currently used by top magazine publishers across the globe in the emerging race to produce lustrous e-magazines for tablet with interactive elements (National Geographic, Wired to name a few…this solution looks promising for html or java coding embedding also, for extra interactivity such as quizzes being able to be included in the e-magazine – we have some success with this already in testing). This is a viable way for us to put existing content from our PDFs onto reader tablets, but will of course be a different experience for the student. We think PDFs will still be useful as a print on demand format, since as yet, e-magazines for mobile devices are not printable as far as we know. It is also worthy to note that at at the moment there are very few students who actually own a reader tablet amongst our students, whilst 100% own a laptop computer. If we take this simple fact into consideration, the PDF solution will continue to be practical for sometime yet.

The technology in this area of publishing/e-learning is developing so rapidly that we just have to keep testing the new templates and tools available. Design is also a huge part of the equation: remembering what the desires of the audience might be and creating something that is not just technologically new but actually practical and useful for the academic arena.

Whatever system we choose to use, we need to be assured that it will work on multiple devices, since the market is quite spread at the moment, with competitive tablets being made which run on android, iOS, Blackberry etc systems. We must focus on a solution that can be easily or intuitively read by multiple devices, so that we needn´t spend lots of time and money designing different versions for different

devices of the same publication. So far we have tested Samsung Galaxy and iPad, and discovered that if one designs an e-magazine for iPad for example with ADPS via InDesign (using also Adobe preview to test content), when the same document is opened on the Galaxy tablet, it will automatically add black margins to give a cropped view of the document so that it will always present in its original size – and does not at least get stretched or altered too much. This is promising. To summarise, we believe that both platforms will have their advantages, and that PDF format will still be a good option for the next few years.

6.3 Analysis of the project: report from the University of Nottingham, UK

The University of Stavanger has had a working partnership with the University of Nottingham (UoN), UK, during the endurance of this project. UoN has been responsible for an academic survey and evaluation of the project thus far, to assess the success and quality of the digital learning tool we at UiS have made. UoN has followed up two year groups on the Bachelor course, including the lecturers over two years, to complete both quantitive and qualitive studies amongst these participating groups. The UoN is preparing to present a report of their findings in January 2012, when it will be made available to the general public.