

**Design and Evaluation of POSbase:
A Web-Based Learning Environment**

POSbase

Presentation Of Science base

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Abstract

This dissertation presents the design, development and evaluation of POSbase in psychology learning. POSbase (Presentation Of Science base) is an online collection of scientific experiments and related information. This is a flexible system that encourages constructive and self-regulated learning by exploring information of interest. It also allows researchers and instructors to share their teaching materials and experiences.

The goal for this study was to discover new design challenges through a formative evaluation. POSbase was therefore introduced to students at the Department of Psychosocial Science. We conducted two evaluations and implemented improvements in between. From the evaluations we found that the students were quite positive toward POSbase, but we also found several design challenges to guide the further development. The research contribution of this thesis is the design challenges found from the evaluations and the discussion of these.

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1. Introduction

POSbase (Presentations Of Science base) is a project aimed at making scientific research experiments available on the Web. It is a collection of experiments and related information and can be expanded to include experiments from a variety of scientific fields. Within the scope of this thesis it is limited to the field of cognitive psychology. This thesis describes the development and evaluation of a prototype of POSbase in an educational setting. In this chapter we present the background and the scientific objectives for this thesis.

1.1 Background

Computers have been widely used in order to enhance learning. The rapid development of the Web has influenced learning and how learning is facilitated. Most universities and colleges have extensive use of the Web to distribute information and learning material. The advent of the Internet and the Web has provided even more challenges for the design of electronic learning material. According to Voogt and Van den Akker (2001) however, the use of educational software is still limited, and there is still insufficient knowledge about how technology can improve learning, and how it best can be utilised.

A lot of research can be found on systems made for educational settings. The problem is, according to Voogt & Van den Akker (2001), that most research has been restricted to simple drill and practice. Another reason is that ICT often aims at contributing to the mastery of complex cognitive skills, and these skills can be difficult to measure. Alessi & Trollip (2001) also claim that much research remains on how to best utilise the possible advantages of ICT in education.

In psychology teaching, thousands of college instructors write PowerPoint presentations about the same classical theories and scientific studies for their lectures. In order to provide such presentations we have designed and evaluated POSbase. A pilot version is available at <http://bigfoot.ifi.uib.no/posbase>.

1.2 Objectives

The main purpose of this project is to design and develop a prototype of POSbase and to conduct an end-user evaluation in order to discover possible improvements.

The intended target users for POSbase are:

- *Students*: Use the material for learning by exploring experiments and theories within the field of interest, get in-depth information about scientific studies and find important definitions. (Hyperlinks connect the content so that it can be explored in a free and self-constructive way.)
- *Lecturers*: Contribute with presentations within their expert domain and share knowledge, use the content for educational needs either by downloading relevant presentations and adapting them to their needs or by using them online.
- *Professionals and other interested*: The same as for the above two groups.

The scope of POSbase is quite large, covering different user populations, different scientific fields and different types of usage. This thesis is limited to cognitive psychology and to exploring how the system can be used in an educational setting with students as the main users. The research question for this project is:

What new design challenges can be found from a formative evaluation of POSbase?

The research question is explored with the following three steps:

1. Design and develop a prototype of POSbase.
2. Conduct a formative evaluation in order to reveal the users' experiences and reactions towards POSbase.
3. Discuss new design challenges and potential improvements based on findings from the user evaluation.

The POSbase prototype was designed and developed using an iterative and user-

centred approach. There were many small iterations and two main prototypes were formally evaluated. As we focus on the student group, the prototype was introduced to students taking courses in Cognitive Psychology at the University of Bergen. It was used in combination with traditional lectures and provided students with an online environment where they could explore and discuss knowledge within the field. The formative evaluation formed the basis for the design challenges concerning POSbase.

1.3 Outline of Content

The organisation of this thesis reflects the steps described above. We first present the theoretical foundation for the thesis in chapter 2, regarding learning theories, system development, research methodology and usability. In chapter 3 we describe the development process and the general structure of the POSbase prototype. The design of the evaluations is presented in chapter 4, and the findings are given in chapter 5 along with a short description of the prototypes used as foundation for the evaluations. The findings are further discussed in chapter 6 with reference to the research question. We also discuss our reflections on the strengths and weaknesses of the research and regarding the theoretical framework. Chapter 7 presents the conclusions and future work.

2. Literature Review

In this chapter we present the theoretical framework relevant for our thesis. Theories of interest are particular concerning learning, system design and development, research methodology and usability issues. The purpose is to give an introduction to the different theories used to design, develop (chapter 3) and evaluate (chapter 4 and 5) POSbase.

We begin by discussing different learning theories and their implications for POSbase. Then we elaborate the theoretical foundation for the development of POSbase and in the end we present the methodological approach chosen for the evaluation and related work.

2.1 Learning Theories and Environments

“Developing effective materials (in any medium) that facilitates learning requires an understanding and appreciation of the principles underlying how people learn”. (Alessi & Trollip, 2001, p.16)

Learning theories have profound influence on the use of Information Technology (IT) in education. This is shown in Figure 2.1. It is important to consider principles of learning when designing technology for use in educational settings. When the goal is to facilitate learning it is important to understand how learning occurs.

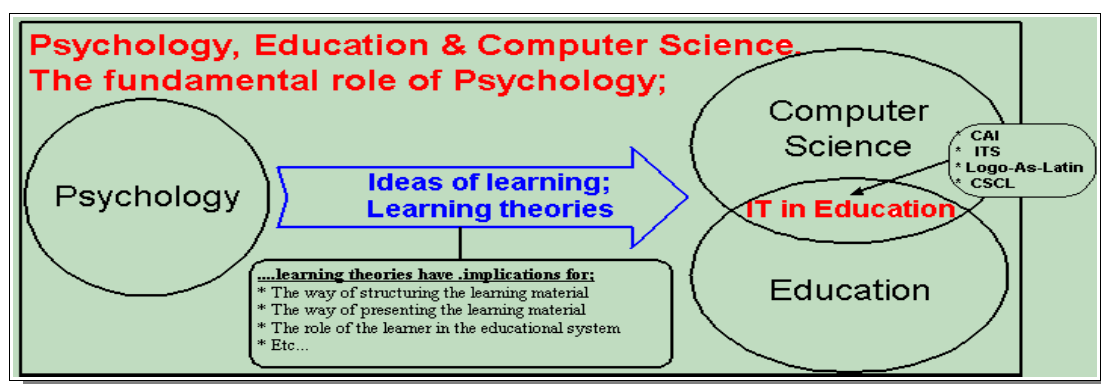


Figure 2.1: The Position of IT in Education (Wilhelmsen et al., 2004)

Broadly speaking we can identify three different schools concerning learning; behaviourism, cognitive theories and constructivism (Hergenhahn & Olson, 2001; Alessi & Trollip, 2001). These different schools differ in their views on important aspects within learning, such as knowledge, learning, motivation and transfer. Greeno et al. (1996), however, categorises cognitive and constructivist theories together as “the situative/pragmatist-sociohistoric” view because they share important framing assumptions, and they both emphasise the importance of organised patterns in cognitive activity. Shuell (2001) categorises the different approaches with regard to the theoretical explanation they provide; behavioural, cognitive and social. It is furthermore emphasised that the different theories are not incompatible, but provide different perspectives to a complex phenomenon (Shuell, 2001; Alessi & Trollip, 2001).

Learning is a difficult concept to define. Hergenhahn & Olson (2001) gives a general definition:

“Learning is a relatively permanent change in behaviour or in behavioural potentiality that results from experience and cannot be attributed to temporary body states such as those induced by illness, fatigue or drugs.”

(Hergenhahn & Olson, 2001, p. 7)

In order to try to understand the different aspects within learning and how they are important for ICT in education, we look more closely at some principles that are relevant for our study, and which underlie many theories of designing learning environments.

2.1.1 Cognitive and Constructivist Principles

The cognitive perspective on knowledge emphasises the understanding of concepts and theories, and learning occurs as a result of general cognitive abilities such as reasoning, planning and problem solving (Greeno et al., 1996). While behaviourism focuses on observable connections between stimuli and response, and that reinforcement is an important condition for learning, cognitive psychology emphasises unobservable

constructs, such as mind, memory, attitudes, motivation, thinking and reflection (Alessi & Trollip, 2001). Figure 2.2 shows a cognitive theory of learning. *Sense* represents how people receive information, either through their eyes or ears. This information is stored in *short term memory*. *Short term working memory* is the information selected for further processing. In *long term memory*, information is encoded into some meaningful form and stored permanently. *Retrieval* represents accessing information that has been stored in long-term memory.

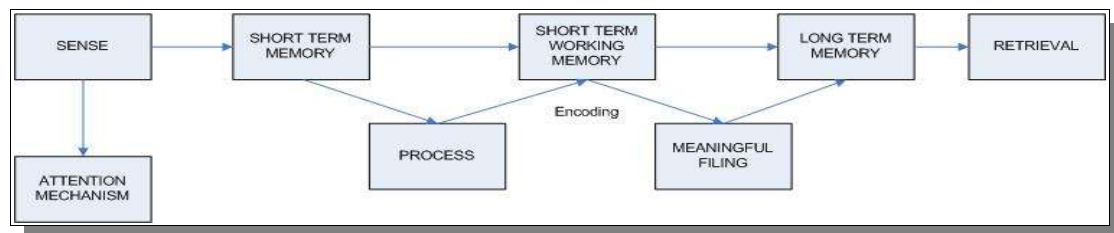


Figure 2.2: Cognitive Theory of Learning (Walker, 2004)

Mayer (2001) presents a quite similar model based on cognitive theory which describes how the human mind processes multimedia. This model assumes that the human information processing system has dual channels for visual and auditory processing (the dual-channel assumption). Each channel has limited capacity for processing (the limited-capacity assumption), and active learning entails carrying out a coordinated set of cognitive processes. This theory is visualised in Figure 2.3.

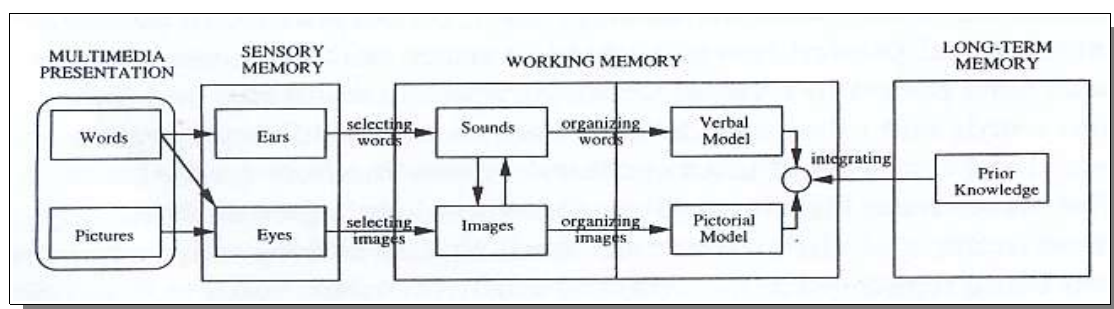


Figure 2.3: Cognitive Theory of Multimedia Learning (Mayer, 2001, p. 44)

On the basis of this theory Mayer (2001) presents several principles for multimedia learning. These principles are intended to contribute to the practice of multimedia instruction. The main important principles are:

- Students learn better from words and pictures than from words alone.
- When corresponding words and pictures are presented near rather than far from each other on the page or screen.
- When corresponding words and pictures are presented simultaneously rather than successively.

According to Mayer (2001) there are two major goals of learning – *remembering* and *understanding*. Remembering is the ability to reproduce or recognise the presented material (retention), and understanding occurs when learners construct a coherent mental representation from the presented material and are able to use this information in new situations (transfer). He claims this model is learner-centred because it takes the learner's information processing activity into account.

Alessi & Trollip (2001) also use cognitive principles when presenting their methodologies for interactive multimedia and in the design of such learning environments. Two important issues that are somewhat similar to those presented by Mayer (2001) are *perception* and *attention*. These should be considered during development because:

1. Information (visual or aural) must be easy to receive
2. The position of information affects our attention to and perception of it
3. Differences and changes attract and maintain attention

One problem to be aware of in multimedia learning is cognitive overload, when “the learner's intended cognitive processing exceeds the learner's available cognitive capacity” (Mayer & Moreno, 2003, p. 43). Effective instructional design depends on sensitivity to cognitive load, which again depends on an understanding of how the human mind works (Mayer & Moreno, 2003).

Motivation is also essential to learning. Within the cognitive approach it is often claimed that learning occurs without the need for extrinsic motivators (Greeno et al., 1996). Extrinsic motivators are applied from outside the learner, i.e. rewards like

grades or money, while intrinsic motivators are those that come from within the person, like personal interest (Alessi & Trollip, 2001). One problem with extrinsic motivators is that the goal can become the reward rather than learning. But this is a controversial issue, much debated also among cognitivists (Alessi & Trollip, 2001). As is obvious, that some aspects for intrinsic motivators are beyond the designer's control, like personal interest, while some are controllable, like the level of challenge and stating the relevance.

Transfer is another important concept when discussing learning, also emphasised by Mayer & Moreno (2003), who claim that meaningful learning is reflected in the learners' ability to apply something that was taught to new situations. Furthermore, research on learning shows that meaningful learning depends on the learner's cognitive activity during learning rather than on the learner's behavioural activity (Mayer, 2001).

In constructivist theory learning results from social interaction and discourse (Shuell, 2001). Learners are active creators of knowledge and learn by observing, manipulating and interpreting the world around them. Knowledge is not received from outside, but we construct knowledge in our heads either by interpreting information or by being active (Alessi & Trollip, 2001; Soloway et al., 1996). The only reality that matters is our individual interpretation of what we perceive. This is the philosophical foundation for constructivism (Alessi & Trollip, 2001). The implications for design of learning environments are that they should be based on authentic tasks to enhance transfer of knowledge. The learning should be goal directed and promote personal perspectives (Land & Hannafin, 2000).

Greeno et al. (1996) emphasise that a successful learning environment should be productive in both interactions with material systems and social interactions in which learners discuss their understanding of those systems and concepts.

According to Alessi & Trollip (2001), proponents of constructivist theory suggest that methodologies such as hypermedia, simulation, virtual reality and open-ended learning

environments are of more benefit to learners than traditional methods (i.e. drill). This is because these methodologies allow the learners to explore information freely, they can apply their own learning styles and use software as a resource rather than as a teacher.

As already mentioned, we do not see the different theories discussed as incompatible, but rather as complementary. Most of the contemporary approaches to learning share, to varying degrees, the following beliefs (Shuell, 2001):

- Meaningful learning is active, self-regulated, constructive, cumulative and goal-oriented.
- Learning is dependent on the particular context in which it occurs.
- Learning is fundamentally a social, cultural and interpersonal process.

2.1.2 Computer Assisted Instruction

Instruction can be seen as the application of basic principles of learning, and should be the creation and use of environments in which learning is facilitated (Alessi & Trollip, 2001). When instruction is delivered via computers these principles are equally important.

After reviewing some important principles on learning we need to look at how computer software can incorporate these principles. In what way do computers affect the learning situation? Voogt & Van den Akker (2001) claim that computers in education and educational software still are limited in use and that research has not yet provided convincing evidence regarding the impact of ICT on student performance. The problem is that simple tests are not sufficient to determine students' mastery of complex cognitive skills. Based on measures of transfer and retention, Mayer (2001) claims that the use of multimedia (co-ordinated verbal and visual messages) improves students' performance. Multimedia, however, needs not be presented via a computer screen, although computers are convenient for this purpose.

Alessi & Trollip (2001) present a general model for successful instruction (Table 2.1). According to this model there are four activities or phases of instruction that should

occur for learning to be effective and efficient:

<i>Activity</i>	<i>Description</i>
Presenting information	Verbal or pictorial, through different methods and with any medium. Instructor or media centred.
Guiding the learner	Interactive phase, including both the learner and the medium. Observing, correcting and give suggestions. This is important as learners make errors, and are frequently not aware of them.
Practising	Learner centred phase. Important to practice what has been learned.
Assessing learning	To provide information about the level of learning, quality of teaching and future instructional needs.

Table 2.1: Model for Successful Instruction (Alessi & Trollip, 2001)

This model was derived from research on successful classroom instruction, but can also be applied to interactive multimedia. That does not mean that the computer needs to fulfil all the phases, as computers usually are just one element in a learning environment.

There has been developed a wide range of applications for use in education as is reflected in the terminology concerning this: “The rather confusing terminology is partly due to the rapid technological changes” (Voogt & Van den Akker, 2001, p. 2474). Alessi & Trollip (2001) provides a classification of what they call methodologies for facilitation of learning. These methodologies can be and most often are combined.

- **Tutorials:** Usually supports the first two phases of instruction; presenting the learners with information and guiding them through the first attempts of reproducing it. Some interaction, such as answering questions.
- **Hypermedia:** Presenting information in an open-ended way. Less structured than tutorials. Often used in combination with web-based learning. A database of information, and multiple methods of navigation.

- **Drills:** Primarily to provide the learner with practice. Useful for repetition.
- **Simulations:** Can be any of the phases. Useful for illustrating a phenomenon or activity.
- **Games:** Usually support practice. Can be combined with drills or simulations.
- **Tools and open-ended learning environments:** Software that are used in combination with other media or activity for achieving some educational goal, i.e. statistical programs.
- **Tests:** Usually the last phase of instruction; assessment, but can also be for practice.
- **Web-based learning:** The Web is a delivery medium, can be combined with other methodologies, most often hypermedia. Can also support distance education.

According to this classification POSbase is a hypermedia system, and we therefore explore this methodology further. As the information is delivered on the Web we call it a web-based hypermedia system.

2.1.3 Hypermedia Systems

Hypermedia programs are used to present or obtain information and are designed for an open-ended experience. Programs of this methodology consist of a database of information with multiple methods of navigation and features to facilitate learning. Hypermedia refers to hypertext documents that in addition to text contain pictorial and/or aural information (Alessi & Trollip, 2001).

The utility of hypermedia is very general, and it represents “the integration, extension and improvement of books and other media (including photographs, video and audio recording) in the electronic domain” (Alessi & Trollip, 2001, p.140). Even though hypermedia has become a quite common method for distributing information (especially on CD-ROMs and the Web), it seems that few systems in the literature concerning ICT in education are defined as web-based hypermedia systems. Most

educational software are designed for more specific purposes and often adapted to specific courses (such as tutorials). This makes it hard to find relevant research on this area. According to Alessi & Trollip (2001) there has been limited research about the hypermedia methodology, and the circumstances or purposes for which this is a good methodology for learning are still not clarified. Some important areas for research on the hypermedia methodology are:

- Navigation and problems with disorientation
- Individual differences and how learner characteristics affect their success with hypermedia.

Land & Hannafin (2000) present some aspects within research on web-based hypermedia systems. One of the issues revealed was that the learners tended to use externally provided questions to navigate the system and find answers, and in this way did not use the system in accordance with the constructivist principles for which it was designed.

Hypermedia is often seen in keeping with constructivist principles because it is learner controlled and supports a discovery approach to the material presented (Alessi & Trollip, 2001). The learner is active in selecting what information to investigate. According to Alessi & Trollip (2001) proponents of constructivism can not claim that active learning is a constructivist principle as this is equally important in cognitive theories. They furthermore claim that web-based hypermedia material are particularly useful for learners doing research.

However, designing and developing any educational software is time-consuming and difficult, especially with systems such as hypermedia which are considered more complex than tutorials and drills. Primary problems and the focus of research are disorientation and problems with navigation. Alessi and Trollip (2001) provide some guidelines and suggestions for these kinds of systems:

- **A clear restricted purpose:** As there are too many loose collections of information.
- **The database:** Especially size, structure and platform independence. The database should be relatively large in order to be useful. The use of standard SQL and web-browser provides the greatest level of platform independence.
- **Navigation and orientation.** One of the main problems of hypermedia. Designers should facilitate orientation by providing cues. The system should contain several methods of navigation, but not too many, as this can be bewildering. The different methods must be clear and visible:
 - **Hyperlinks:** Hyperlinks inside text affects readability and tends to increase browsing, but are more convenient to the user than placing them elsewhere on the screen. Hyperlinks should furthermore have a consistent appearance and only be attached to important information.
 - **Menus:** Facilitate user orientation (knowing where you are) as well as navigation (getting where you want to go). Returning to a menu can help regain sense of orientation.
 - **Searching:** Especially important for large databases. Quick and powerful. Particularly suited for text. A disadvantage is potential for disorientation.
 - **Indexes:** Allows browsing. Is limited to the set of words the author indexed.
- **Features supporting learning and learning strategies:** Enhancing motivation, encoding and retention/use of the knowledge:
 - **Attention:** through good display design.
 - **Confidence:** through support for orientation and navigation
 - **Control:** through good user interface, making actions easy.

2.1.4 Learning with POSbase

The *purpose* of POSbase is to make scientific experiments available as resource on the Web. The system consists of a database of different experiments and theories within psychology, and in the future it can also incorporate studies from other scientific fields. It is intended as a flexible system to be used by novices as well as professionals. The material can also be used for instruction either online or downloaded and adjusted to the particular needs of the course. For this purpose, the hypermedia methodology is

very appropriate. The *database* is intended to become very large, but this will take some time as other researchers and lecturers need to be informed and interested in contributing. *Navigation* is mainly facilitated for by hyperlinks, menu and search.

The content of POSbase is designed according to multimedia principles; using both verbal descriptions and graphs (dual-coding theory). The presentations in POSbase contain words and pictures, as well as some animations. Perception and attention are facilitated by presenting a limited amount of information per slide and by emphasising the order in which it is presented. By providing only one topic per slide and by defining keywords on separate slides, the problem of cognitive overload is addressed.

The use of POSbase is not mandatory, but is a supplement for those who want to explore relevant information (curiosity). Other intrinsic motivators can be that POSbase contains the same experiments as those in the lectures (relevance) and can therefore be used for repetition or preparation. This can help to enhance the understanding of difficult concepts. By summing up important conclusions the content is furthermore arranged to be easily understood.

POSbase also includes a discussion forum and transfer of learning can be achieved through relevant discussion provided here. In this way the students can use their knowledge in new situations and with different perspectives.

In POSbase the students' cognitive activity is stimulated by performing the experiments given in the presentations and by finding definitions of important terms used in the presentations. This can be seen as interaction with the system, and the discussion forum is meant to promote social interaction and discourse.

POSbase is not only a way of presenting information (Table 2.1), but also encourages active learning by enabling the user to freely explore the content. Some guidance can take place through the forum, but this depends on the lecturer and the students. It can also be seen as a way of practising what they have learned, as they can repeat the

experiments through relevant discussions. The information can furthermore be explored in different manners, from general concepts like memory to specific experiments or vice versa. POSbase is not intended to replace the traditional lectures, but can rather be seen as a supplement. Its main purpose is to present information, and when used for academic learning it should therefore be combined with techniques for guiding and practising as well as assessment of learning.

2.2 Design and Development Processes

“Iterative design methods that allow early testing of prototypes, revisions based on feedback from users, and incremental refinements suggested by usability-test administrators are catalysts for high-quality systems.”

(Shneiderman, 1998, p. 97)

Both Shneiderman (1998) and Jacobsen et al. (1999) emphasise the importance of using a development model because once the system is implemented it will be very costly and time consuming to make major changes. Jacobson et al. (1999, p. 4) defines a software development process as “the set of activities needed to transform a user’s requirements into a software system”.

The next sections present different development models or frameworks. We then describe how we used these in our development of POSbase.

2.2.1 Software Development Processes

The Waterfall Model

The waterfall model has four main phases. The first step is collecting the requirements, this information is processed and converted into design. The design is then coded and tested, and the product is completed. The completed product is then again tested and maintained for the rest of its life (Preece et al., 1994). The Waterfall Model aims at finishing each phase before continuing the next. Figure 2.4 shows a representation of

the standard software engineering waterfall model of design.

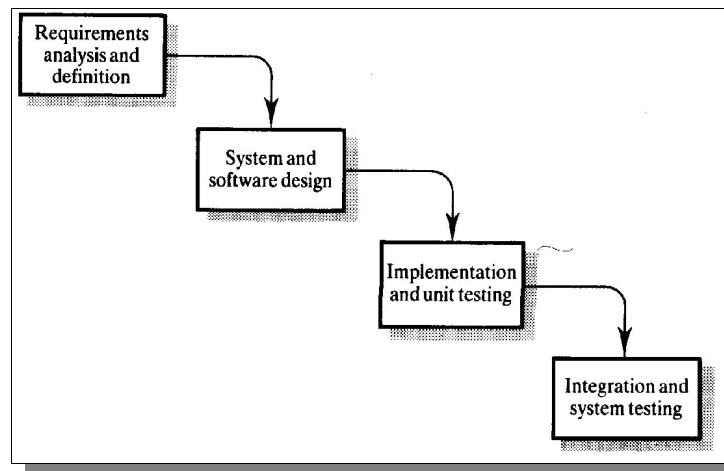


Figure 2.4: The Waterfall Model (Preece et al., 1994, p. 46)

According to Dix et al. (1997) the design process is iterative in practice and not in a pipeline order as shown in Figure 2.4. He furthermore claims that the traditional software life cycle suits a principled approach to design. If the development team knows what they want to produce from the beginning, then they can structure the approach to design in order to attain the goal.

The waterfall model has been criticised because it does not reflect the reality of design development. Dix et al. (1997) also criticise that the cycle does not promote the use of notations and techniques which support the user's perspective of the system.

The Unified Process

The Unified process (Jacobsen et al., 1999) divides each phase into smaller modules which goes through the whole cycle before starting the next step. In this way some parts of the system gets finished before the whole system is running. Figure 2.5 below shows The Unified Software Development Process. At the top of this model there are four phases presenting the life cycle of a process within the development model. The four phases are; inception, elaboration, construction and transition. At the left in Figure 2.5 the work flows are shown; requirements, analysis, design, implementation and test. Jacobsen et al. (1999) defines iteration as “the steps in the work flow” and increment

as “the growth in the product”. For each time the product passes an iteration it will grow, and the product will get a step closer to being finished.

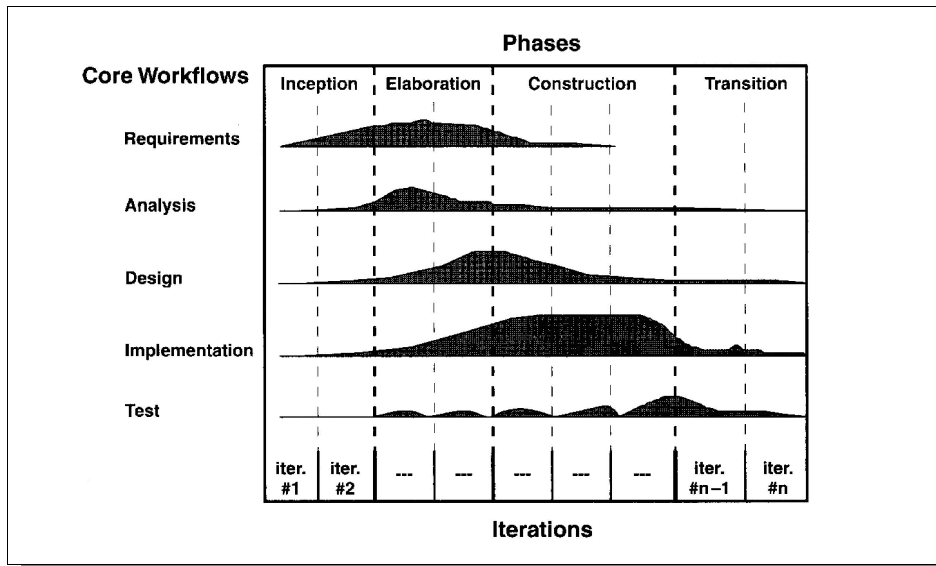


Figure 2.5: The Unified Software Development Process (Jacobson et al., 1999, p. 11)

Agile Software Development

A critique raised by proponents of the agile approach is that traditional methodologies include too much process and is “documentation heavy”. The Agile Manifesto was written in February 2001 by the Agile Alliance (Martin, 2001) and emphasises four principles:

- **Individuals and Interactions** over *Processes and Tools*
- **Working Software** over *Comprehensive Documentation*
- **Customer Collaboration** over *Contract Negotiation*
- **Responding to Change** over *Following a Plan*

These principles emphasise what is important in the development process. The team should have strong players, they should communicate well in addition to contributing with their competency. The documentation should be short, readable and describe the system and the rationale for their design decision. The process should also involve customer feedback on a regular and frequent basis and have the ability to respond to

changes (Martin, 2001). Examples of agile approaches are Adaptive Software Development (ASD), Extreme Programming (XP) and the Rational Unified Process (RUP) (Keith, 2002).

2.2.2 User-Centred Design

According to Shneiderman (1998) there are two key issues for User-Centred Design (UCD):

- Rapid prototyping
- Iterative usability testing

Usability is the main focus for UCD. Design should be based on careful observation of current users, validated through prototypes, and usability and acceptance tests. Direct interaction with users during the design phase is very important in order to accommodate to the users' skills, goals and preferences. Shneiderman (1998) also claims that careful attention to user-centred design issues in the beginning of the software development reduces time and cost dramatically.

Another important characteristic in UCD is that the process should be iterative. Testing and revision based on prototypes are important features when it comes to iterative design. Preece et al. (1994) and Flagg (1990) also emphasize the importance of evaluation during the development process. Shneiderman (1998) calls this the design-test-refine cycle. He also argues that the design process should be seen as a dynamic process and that design is "inherently creative and unpredictable".

Preece et al. (1994) presents the Human Computer Interaction (HCI) model which is based on the premises that design should:

- be **user-centred** and involve user as much as possible so that they can influence it,
- **integrate** knowledge and expertise from the different fields that contribute to Human Computer Interaction design,
- be highly **iterative** so that testing can be done to check that the design does indeed meet users' requirements.

As can be seen, these premises are much the same as Shneiderman's key issues in UCD.

2.2.3 Design of Learning Environments

There are few design processes made especially for developing learning systems. Talavera et al. (2001) uses the Unified Process in their framework for a software development model designed for developing electronic learning environments. They claim the lack of a particular step in this process when it comes to designing systems for online learning. The developer should be considering the different learning theories when publishing new learning systems, just as they would if publishing a new book within the same field. Applying learning theories when developing a learning system, can assure the quality of learning in a context. In Figure 2.6 below we see that learning and training methodology has been added to the Requirement Capture Chart. They also provide a list of additional questions that should be considered when capturing the requirements. This is to help the development team to identify user profiles, what the context is etc.

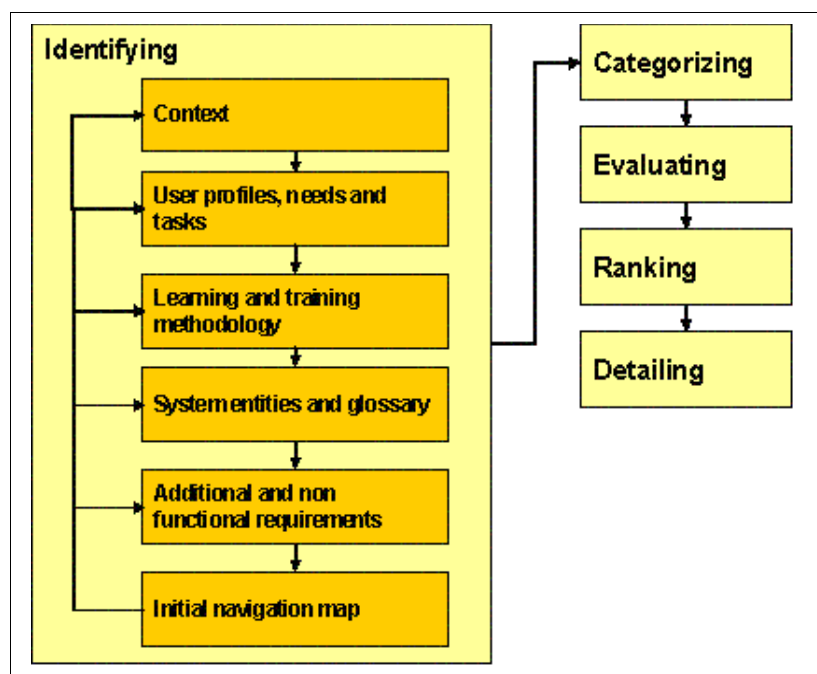


Figure 2.6: Capturing Requirements Chart (Talavera et al. (2001) p. 4)

Soloway et al. (1996) use UCD as a starting point for developing a framework for Learner Centred Design (LCD). Their motivation is to include principles based on sociocultural and constructivist theories in the development process.

Alessi & Trollip (2001) also argue for the need to include educational theory when developing learning environments. They present several methodologies used to facilitate learning via computers. They have created a model for developing interactive multimedia materials, see Figure 2.7. This model has three attributes (standards, ongoing evaluation and project management) that are always present in the three phases; planning, design and development. The idea of having the attributes surrounding the three phases of the model is to indicate that they should be considered at all times (Alessi & Trollip, 2001).

In the planning phase (see Figure 2.7) some of the important decisions are to decide what methodology to use, identify the learner characteristics and the projects goal; what the learners should know or be able to do after completing the program. The design phase deals with the activities of assembling the content, designing layout and functionality, and communicating ideas accurately to clients and customers. In the development (implementation) phase the design of a multimedia program is turned into a robust product.

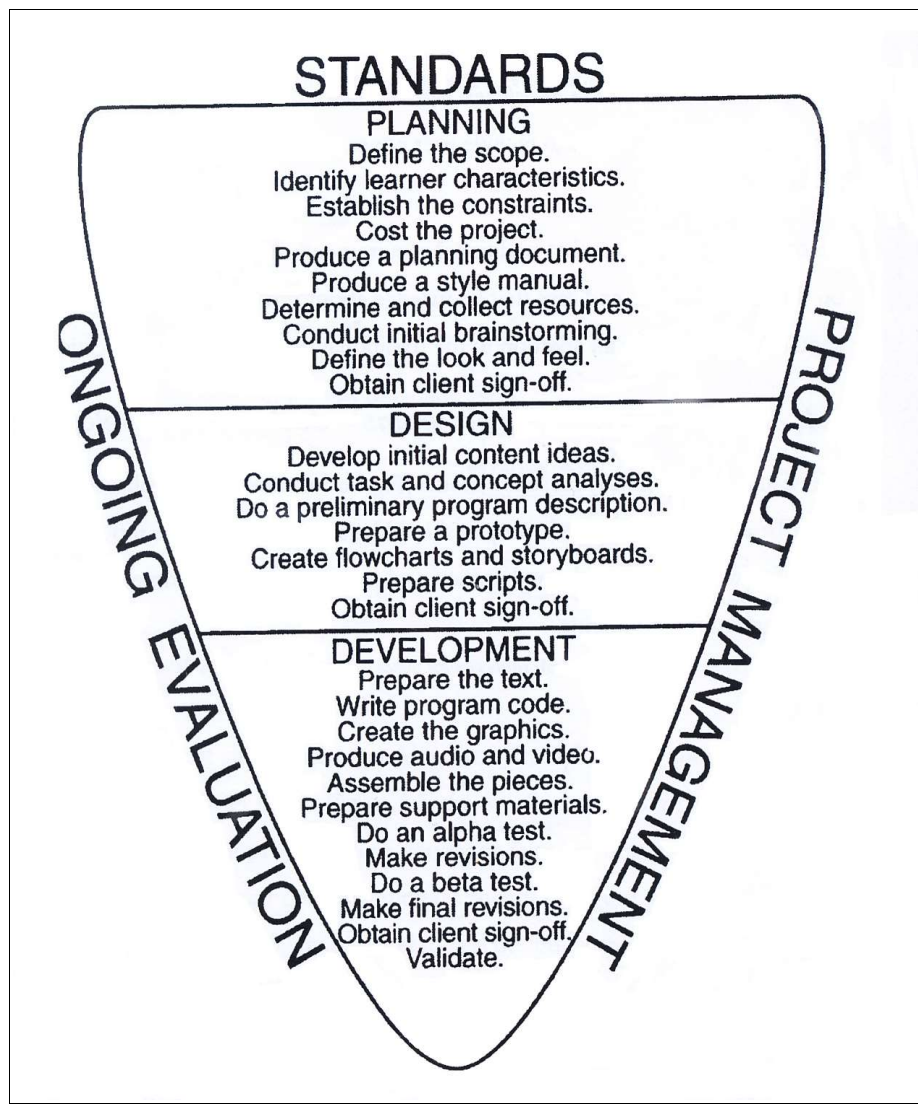


Figure 2.7: Model for Design and Development (Alessi & Trollip, 2001, p. 410)

Standards are the starting point which defines the quality that the project team constantly strives for. The two most used standards are those that the project team brings to the table and those derived from the requirements of a specific project and client. The standards are useful if they are consistently applied throughout a project. This requires commitment, vigilance and the *ongoing evaluation* of everything that is done. *Project management* refers to good management of resources, money and time.

2.2.4 Development of POSbase

The development of POSbase has been influenced by several system development models presented above. The Important aspects that we have emphasised during the development are:

- Software Development Processes
 - Iterative process
 - Ongoing evaluation
 - Emphasise working software over documentation
 - Adapt to changes
 - Close communication within the team
- User Centred Design
 - Close contact with the user
 - Prototyping
- Design of Learning Environments
 - Requirements based on the Requirements Capture Chart
 - Identify learner characteristics

2.3 Research Methodology

This section presents different approaches to evaluation and usability issues that form the methodological framework relevant for our evaluation.

According to Preece et al. (1994) evaluation is an important part of user-centred design. The following forms of evaluations can furthermore be distinguished (Wottawa and Pult, 2001):

- **Micro evaluation** (the focus is on individual aspects of the evaluated program) vs. **macro evaluation** (global results are of interest);
- **Internal evaluation** (those responsible for the scheme evaluate the program themselves) vs. **external evaluation** (development of the program and its evaluation are separate);
- **Summative evaluation** (the review of the results takes place after a scheme program has been completed) vs. **formative evaluation** (a measure and its effect

are constantly checked in order to optimize it).

These models can be used as a scheme for evaluation studies. But as argued in their article, the model to be chosen needs to be done so strategically. When focusing on practical issues it is furthermore argued that most evaluation studies cannot be completely described with just one model because of the complexities in real life. Therefore several dimensions and evaluation criteria are required (Wottawa and Pult, 2001). As the evaluation of POSbase is a formative evaluation, we describe this approach further.

2.3.1 Formative Evaluation

According to Flagg (1990) the main reason for performing formative evaluation is to assist the decision-making process during all the stages of the development of an educational program. The purpose is to improve the program. Table 2.2 shows how formative evaluation assists each phase in the development.

<i>Phase</i>	<i>Program Development</i>	<i>Phases of Evaluation</i>
1	Planning	Needs assessment defining the three areas of content, audience and medium/setting.
2	Design	Pre-production formative evaluation assist in design decisions, generate strategic information.
3	Production	Production formative evaluation revising a product based on feedback from try-outs.
4	Implementation	Implementation formative evaluation support material and future programs.

Table 2.2: Program Development and the Role of Evaluation (Flagg, 1990)

During planning the needs assessment role of evaluation helps to identify needs, set priorities and determine feasibility of programs to meet those needs. In the design phase the pre-production formative evaluation includes the target audience and teachers in the process of making design decisions about content, objectives and production formats. During the production phase evaluation involves revising a

program based on feedback from try-outs of early versions with the target group. In the implementation phase evaluation is concerned with how the program operates with target learners in the environment for which it was designed (Flagg, 1990).

Formative evaluation is conducted by collecting data material. According to Silverman (2001) the following methods are used to collect data in the social sciences:

- Observation
- Analysing texts and documents
- Interviews
- Recording and transcribing

As Silverman (2001) describes the use of qualitative data in his book, he does not mention the survey as a particular method. However, this is a common way of gathering data from larger samples (Preece et al., 1994; Warwick & Lininger, 1975) and has the advantages of being cheap and unobtrusive.

Both Preece et al. (1994) and Flagg (1990) recommend the combination of different methods, often called triangulation. According to Flagg (1990) this is the most common approach to increase the likelihood of credible findings in formative evaluation. Methods can furthermore be used both qualitatively and quantitatively, as both Grønmo (1996) and Silverman (2001) argue. And, as they also point out, quantitative and qualitative approaches are not mutually exclusive, but can be combined.

Grønmo (1996) recommends triangulation when choosing methodological approach. He defines this slightly different from the above definition; as a combination of different data (qualitative and quantitative). The advantage, he claims, is that one can overcome many of the shortcomings of both sides. He points to a number of advantages, but above all, the overall validity of the study is strengthened. As a consequence the confidence in the result is also strengthened, as one can assume that the results are not due to the peculiarity of the methods employed.

2.3.2 Usability

Usability often refers to how *useful* a system is for the user, and can include issues like design of layout, use of colours and amount of information on a page. Another aspect of usability is to maintain the intended purpose of the system, namely the gain that the system offers. Learning environments usually offer ways of achieving learning/knowledge and therefore learning theories also have to be considered to maintain usability. This was discussed in section 2.1.

Several terms has in the past been used to denote if the system was “good” or usable. Different authors have proposed definitions and categorisations of usability, and it seems that there is some consensus on the concept, and that the definitions mostly differ on more detailed level (Van Welie & Van der Veer, 1999).

“The effectiveness, efficiency and satisfaction with which specified users achieve specified goals in particular environments.

***Effectiveness** is the accuracy and completeness with which specified users can achieve specified goals in particular environments,*

***Efficiency** is the resources expended in relation to the accuracy and completeness of goals achieved,*

***Satisfaction** is the comfort and acceptability of the work system to its users and other people affected by its use.” (Dix et al., 1998, p. 192)*

This definition of usability is from the ISO standard 9241, and approaches usability from a theoretical viewpoint and may not be very practical (Van Welie & Van der Veer, 1999).

Table 2.3 below compares Shneiderman's and Nielsen's definitions of usability to the ISO standard definition, presented by Van Welie and Van der Veer (1999). Nielsen expands the ISO standard definition and suggest four additional elements; efficiency, learnability, memorability and error/safety. Shneiderman's (1998) “*five measurable human factors that are central to evaluation of human factor goals*” are almost

identical to Nielsen's definition.

<i>ISO 9241-11</i>	<i>Shneiderman</i>	<i>Nielsen</i>
Efficiency	Speed of performance	Efficiency
	Time to learn	Learnability
Effectiveness	Retention over time	Memorability
	Rate of errors by users	Error/Safety
Satisfaction	Subjective satisfaction	Satisfaction

Table 2.3: Usability from ISO 9241, Shneiderman and Nielsen
(Van Welie & Van der Veer, 1999, p. 4)

Dix et al. (1998) suggests a rather different categorisation. He presents the following principles to support usability:

- **Learnability** the ease with which new users can begin effective interaction and achieve maximal performance.
- **Flexibility** the multiplicity of ways the user and system exchange information.
- **Robustness** the level of support provided to the user in determining successful achievement and assessment of goals.

Figure 2.8 shows a layered model of usability, and can help in further understanding of this issue.

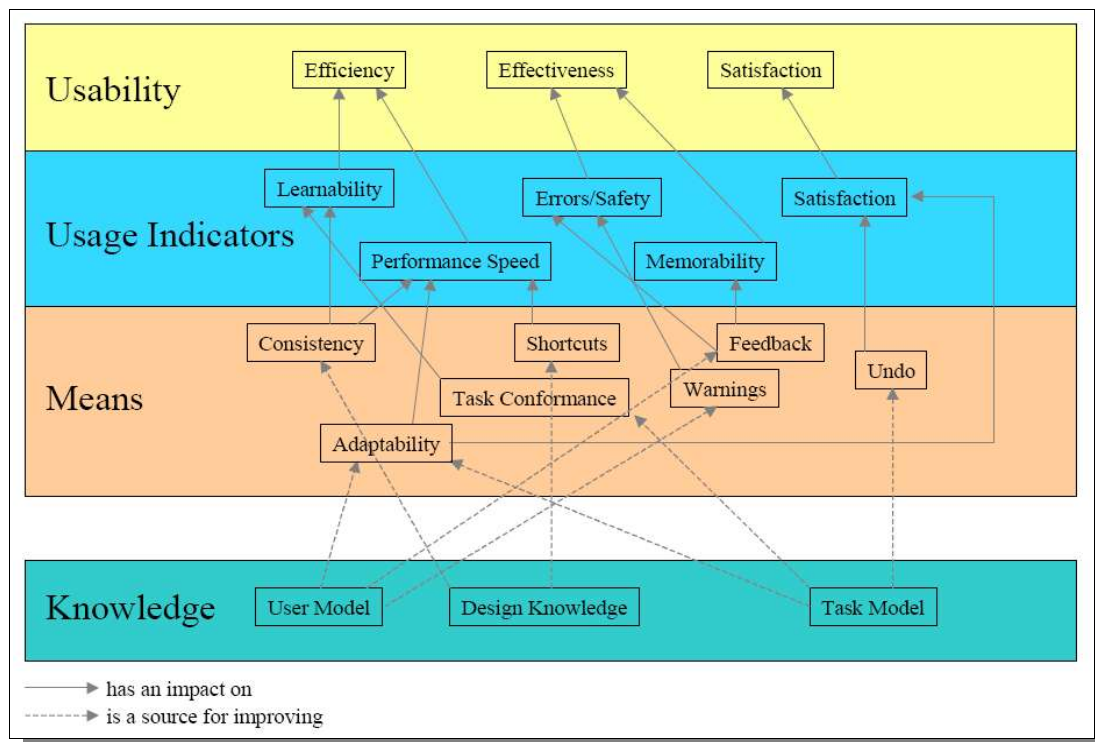


Figure 2.8: Layered Model of Usability (Van Welie & Van der Veer, 1999, p. 5)

On the highest level, the ISO definition of usability is given; efficiency, effectiveness and satisfaction. The second level contains a number of *usage indicators*. These are factors that can actually be observed in practice and in this way be used to generalise about *usability*, i.e. performance speed affects efficiency. On the next level are the *means*. These are “tools” that can be used to enhance usage indicators and indirectly usability, i.e. warnings may reduce errors. How to use the means depend on different knowledge domains. *Knowledge* can assist the designer with information when design decisions are needed to be made (Van Welie & Van der Veer, 1999).

Van Welie and Van der Veer (1999) furthermore emphasise that the knowledge domains are the basis for usable design. This is also emphasised by Shneiderman (1998) who claims that academic research is the foundation for successful user interface design. To understand the users' abilities and limitations, cognitive and perceptual abilities are relevant to design. It is also important to have design knowledge both from own personal experience and from literature.

Dix et al. (1998) also see the importance of using different types of knowledge during the design. He suggests that design rules for interactive systems can be supported by psychological, cognitive, ergonomic, sociological, economic or computational theory which may or may not have roots in empirical evidence. These rules are used to apply the theory in practice.

As argued for by Van Welie and Van der Veer (1999), Shneiderman (1998) and Dix et al. (1998) knowledge is an important aspect underlying the understanding of usability and the design of usable systems. We shortly present some guidelines given by different authors. Many of the guidelines cover similar aspects, we have therefore compared the five factors given by Alessi & Trollip (2001) with Shneiderman's (1998) eight golden design rules. This is shown in Table 2.4.

Alessi and Trollip (2001) claim that the factors apply to practically all software for learning and instruction. Shneiderman (1998) guidelines provide helpful reminders of rules uncovered by designers. He presents design rules for interface design. When compared to the five factors presented by Alessi & Trollip (2001) we see that Shneiderman mainly emphasises learner control (Table 2.4).

Nielsen (2000) emphasises the importance of usability concerning the design of web-pages. His guidelines are more concrete than those presented in Table 2.4 and there are especially three important areas which need to be considered regarding usability. These are page design (surface appearance), content design (presentation of information) and site design (navigation). He especially emphasises simplicity in the design, and the guidelines cover issues such as how to use colours, CSS, fonts, hyperlinks etc.

Alessi & Trollip (2001)		Shneiderman (1998)
Factor	Description	Design rules
Introduction of the program	This includes three factors; title page, directions and user identification. The recommendations towards these factors include; keeping the title page short and clear, include directions simple and self-evident, and only to include identification if needed.	<ul style="list-style-type: none"> • Reduce short-term memory load
Learner control	There are three considerations concerning the design of learner controls: <i>what and how much</i> the learner can control, the <i>method</i> of control, and <i>mode</i> of control.	<ul style="list-style-type: none"> • Enable frequent users to use shortcuts • Offer informative feedback • Support internal locus of control • Permit easy reversal of actions
Presentation of information	Techniques for presenting information should be <i>consistent</i> . The designer should also consider how to present different modes like text, graphics, sound and video. The designer should furthermore consider use of colour when presenting information, like ensure contrast between foreground and background, be consistent with use of colours and balance learner affect and learning effectiveness when using colour.	<ul style="list-style-type: none"> • Strive for consistency
Providing help	Learners should always be able to get help. Help for operating the system (procedural help) should always be available; with i.e. rollovers. Help with the content can also be an advantage.	<ul style="list-style-type: none"> • Offer error prevention and simple error handling
Ending a program	Temporary endings and the option to leave temporarily apply to <i>every</i> type of program and should always be available. Permanent ending applies well to some types of program (tutorials, drills, tests) but less or not at all to other types of programs (simulations, hypermedia, tools).	<ul style="list-style-type: none"> • Design dialogs to yield closure

Table 2.4: Design Guidelines

2.3.3 Evaluation of POSbase

As POSbase is not considered a final product, but rather a prototype, with the aim to find potential improvements, we found formative evaluation appropriate for our purpose.

Figure 2.9 visualises the formative evaluations with regard to the development process. We found a combination of methods appropriate for our evaluation of POSbase, as this would reveal various aspects of users' experiences and can verify the findings from the different methods. The data collection for the external evaluation consisted of four methods; questionnaires, interviews, observations and logging.

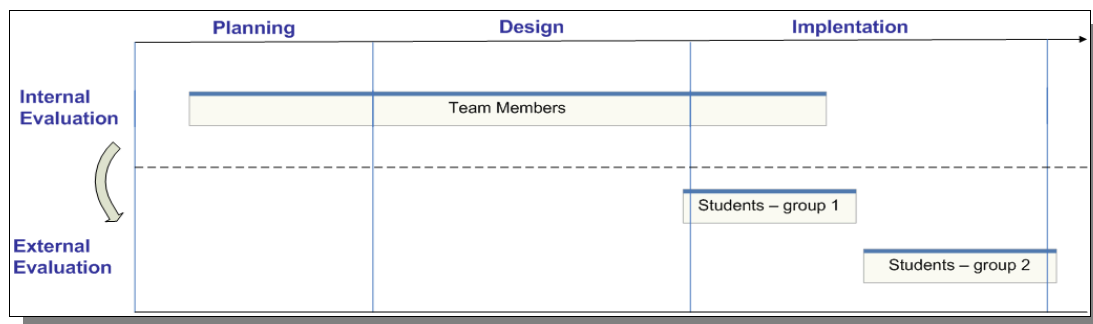


Figure 2.9: Development of POSbase

Usability is an abstract concept, and can therefore be difficult to measure. In the evaluation of POSbase we chose to emphasise three different aspects in order to answer our research question; system usage, usability and user satisfaction. With system usage we look at how much time the students spent, and how often they entered POSbase. With usability we look at how efficiency and effectiveness (Table 2.3) refer to the different functions offered in POSbase. According to the definitions in Table 2.3 user satisfaction is a part of the usability definition. We used user satisfaction to support the findings concerning usability.

Figure 2.8 presented a layered model of usability. In the evaluation of POSbase we are able to collect data concerning *usage indicators*, which are shown in the second level in this figure. From these we can generalise about usability. Compared to this model the questionnaires and interviews mainly provide us with knowledge about user

satisfaction. There are also questions concerning *learnability* and *memorability*, although these will still be based on the users' subjective opinions. Potential *errors* are revealed through the observations.

Different principles are also used as a foundation for the design and development of POSbase with these implications:

- Consistent layout (both framework and content)
- The users are the initiators of actions
- Actions are reversible
- Design a help function that is always available
- Simplicity in design

2.4 Related Work

The focus on developing online resources for education has increased considerably over the last few decades. Many universities have started offering their courses online, an one example of this is Massachusetts Institute of Technology (MIT) which offers a substantial number of courses freely available over the Internet. Another example is the Global Virtual University which relies solely on web-based education.

University of Bergen uses the Web and “Studentportalen” to distribute lecture notes and different learning material as well as course information to the students. The lecturers use this portal to upload lecture notes and course information, while the students use it to download the notes for their lectures. There is also a discussion forum available, but it is hardly ever used. The Web is therefore primarily used as a medium for distributing information rather than for facilitating learning.

The RadioWeb project (Sevik, 2003) developed and evaluated a prototype for providing web-based learning material for the introductory course in radiology at the University of Bergen. The web-based learning material consisted of a web lecture, lecture notes, exercises and discussion group that were intended to be used in addition to regular face-to-face lectures. The motivation for providing learning material on the

Web was to stimulate increased student activity during the classroom lectures. The evaluation revealed that most students enjoyed viewing lectures online, and they would like to have more web lectures in the future. Some design issues were also discovered, mainly concerning navigation.

Another project is a web supported system for a Geographic Information System (GIS) course at the University of Bergen (Eie, 2003). This project describes the design and development, and user interaction satisfaction measurement of this system. The system contained online lectures, quizzes, map galleries and review system, and a discussion forum. The purpose of the project was to identify user reactions to the system rated by Questionnaire of User Interaction Satisfaction (QUIS). The data collected showed that students were satisfied with using an online support system and that they thought it was interesting and stimulating. However, some students reported that the course would be better if web-technology was used in conjunction with traditional lectures.

POSbase is different from the above mentioned systems. It is a flexible system and students can engage in active learning and make connections between different scientific fields. They use it to get in-depth information about scientific studies by exploring experiments, theories and important definitions. POSbase also provides a medium where professionals can share information, by contributing with descriptions of experiments from their expert domains.

2.5 Chapter Summary

In this chapter we have presented the theoretical foundation for this thesis. We started with presenting learning theories and principles and showed how these are incorporated into POSbase. Different system development theories were also introduced to explain how they were used in the development of POSbase. Then we described the methodological framework relevant for the evaluation. We compared POSbase to some related work.

3. Design and Development of POSbase

We have divided this chapter into three separate parts according to the different stages in the development process; planning, design and implementation. In reality these phases were overlapping as the completion of the project was done iteratively. Our development is based on the principles outlined in chapter two.

The development process started in mid-August 2003. The 15th of October was the deadline for the first version of the system. Deadline for the second version was 23rd of January 2004. These deadlines depended on the starting dates of the courses using POSbase. The development process describes the completion of both versions.

3.1 Planning

According to Talavera (2001) there are 6 steps needed to identify the requirements:

1. Identifying context
2. Identifying the user profiles
3. Learning methodology
4. System entities
5. Additional and non functional requirements
6. Initial navigation map

We found these steps useful as a guideline during the planning phase. A more detailed presentation of these steps was given in Figure 2.7 in chapter 2.

3.1.1 Context

The context is an academic learning environment, and the aim is a web-based knowledge base that contains scientific experiments within the field of cognitive psychology. The scope of the system is that it can in time become quite large, covering different fields within science. POSbase is furthermore going to be a general system, not especially adjusted to the two courses used for our evaluation.

3.1.2 User Profiles

We identified three different user groups for POSbase:

- *Students*: Who can use it in their education for research, assessments and in combination with lectures as repetition or preparation.
- *Lecturers or researchers*: In research, for use in preparation of educational material, to contribute with presentations from their expert domain.
- *Other people with an interest in psychology*: To get insight into psychological experiments and theories.

The focus for our research is the student user group. POSbase is planned to be evaluated in four cognitive psychology courses, both at the undergraduate and advanced level. The student tasks are to find relevant information as presented in the lectures or for use in different assignments and to engage in discussions. The system can be used both for preparation before the lecture and as repetition after the lecture. There will be no compulsory tasks. The students are furthermore used to getting their lecture notes from the Web as the university uses “Studentportalen” where students have their schedule and learning material available. In recent years it has been mandatory for students to check this portal in order to get necessary information about the courses or field of study.

POSbase also provides lecturers with presentations that they can use for their own lectures. It is possible to contribute with presentations to the database, although this is not the primary focus of our thesis. The system is furthermore open for anyone with an interest in psychology, or any of the other fields covered by POSbase.

In the planning phase we did not know the level of the computer experience, nor the users' experience with electronic learning environments, and it is therefore important to keep the system as simple and intuitive as possible.

3.1.3 Learning Methodology

The choice of learning methodology defines the way learning is performed and how it matches the different learning paradigms/orientation (Talavera et al. 2001).

In the planned system learning is mainly based on:

- *Absorbing*: reading, finding relevant information
- *Learning by social interaction*: through discussion forum
- *Learning by doing*: running simulations/practical experiments in the PowerPoint presentations (stimulating cognitive behaviour and active learning)

The learning material consists of experiments and definitions. The students can explore information that are relevant for their course. Through the discussion forum the students can also share ideas and opinions about related problems. A more thorough presentation of learning methodology has been outlined in chapter 2. We define POSbase as a web-based hypermedia system according to the classification by Alessi & Trollip (2001). One of the main components for such a system is to have a clear and well-reasoned purpose, and then it must be designed in accordance with this purpose.

3.1.4 System Entities

To identify the different system tasks, we conceptually categorised the functionality as follows:

- *Search (simple and advanced)*: to reach the content of the database which consists of presentations of scientific experiments or theories.
- *Discussion forum*: to allow students to exchange ideas.
- *Help function*: to provide information about the different functions.
- *Contributions*: to make it easy for contributors to send in new presentations.
- *Administration*: to insert, update and delete presentations and database content.

3.1.5 Additional and Non Functional Requirements

Talavera et al. (2001) mention three important elements in system design:

- *Accessibility*: ease of use, orientation, learning, memorability
- *Availability*: to computers, to internet, language
- *Reliability*: robustness, compatibility

Ease of use makes a system accessible for a broad range of users, from novice to expert level. It was important that the system was intuitive, easy to learn and easy to navigate.

As this is a web-based system the users needed internet connection. All the students attending the courses had computer labs available at campus with broadband connection. The capacity, at least on the undergraduate courses, could however be limited as there were quite many students. Availability could therefore be a problem. Another limitation could be internet connection speed. The PowerPoint files were relatively large, and could be slow to download on a modem connection when at home.

In order to reach as many users as possible, and because the final system was aimed at an international audience, the language was set to English which was used both in the PowerPoint presentations and as the main language on the system pages.

Reliability is dependent on the robustness of the system, which again is dependent on thorough testing. It was therefore necessary to test for compatibility between different browsers and platforms.

3.1.6 Initial Navigation Map

The navigation map visualises how users would navigate in the system, and the boxes in Figure 3.1 represent different pages. The arrows show the direction of the navigation, where home is the starting point. One goal was that it should be easy to reach the content of the database, and that it should not be too many clicks away. From the home-page users could reach almost all the other pages with just one click.

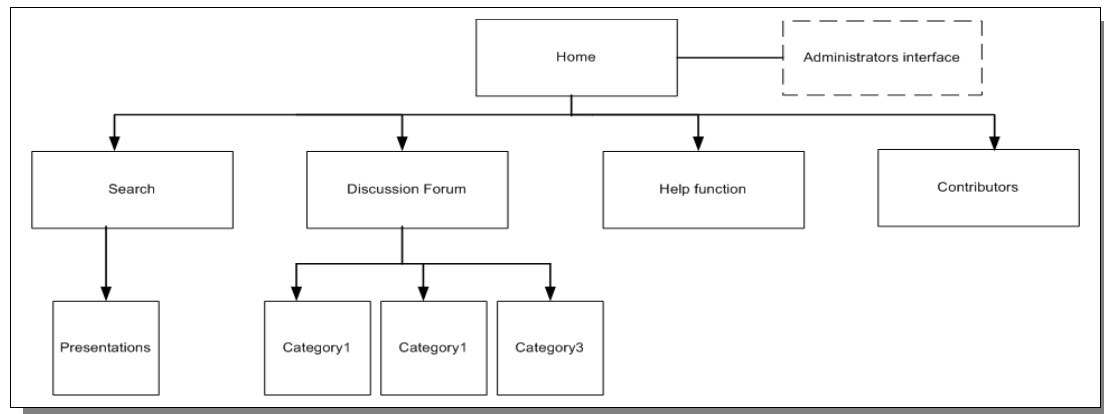


Figure 3.1: Initial Navigation Map

3.1.7 Summary of the Planning Phase

Each step in the planning phase helped us capture the initial requirements for the system. This specification was settled by defining the users, the most important features and functionality. A draft of the requirements is listed below.

General requirements

- Type of files in the database: PowerPoint Presentations
- Users should be able to navigate freely.
- The system should be able to have hundreds of contemporary users.
- The system should be flexible to include new scientific fields.
- The database should be able to contain hundreds or thousands of presentations.

Student Interface

- Two different search approaches: simple and advanced.
- The search criteria:
 - Simple search: Keyword
 - Advanced search: Author, journal, keyword, year of publication and scientific field
- Search result: Only show the scientific experiments.
- Include a discussion forum

Administration Interface

- Insert, update and delete content in the database.
- Access control.

Contributor Interface

- Template for contributing with presentations.

As our process was based upon an iterative model, this list was revised as the development proceeded. The two next sections describe how POSbase was designed and implemented.

3.2 Design

This phase was mainly about shaping the system and adding functionality. The layout and “look and feel” of the system were constructed, as we decided how the interface should be. The list below summarises how we completed this phase:

- Database design
- Drew layouts by hand and in Microsoft Visio
- Made prototypes in HTML showing expected layout and functionality
- Updated and added functionality to the requirements

The design phase was guided by principles from Nielsen (2000) and Shneiderman (1998), as outlined in chapter 2.

3.2.1 Database Design

Figure 3.2 shows an Entity-Relationship model (ER-model) that reflects the structure of the database. The database consists of four entities that reflect the different types of presentations that users should be able to search for and retrieve. These entities correspond to four “different” kinds of files, all given in PowerPoint format:

- *Experiment or theory*: An example of an experiment is “Mood as Information” by Schwartz & Clore (1983) which explains how mood is used as information for judgement.

- *Keyword* (definition): Examples of keywords to the above experiment are: Mood, Mood Congruence, Mood Induction.
- *Reference*: The reference for the experiment is: Schwarz, N., & Clore, G. L. (1983). Mood, misattribution and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, 45, 513-523.
- *Contributor*: The contributor of this experiment and the attached keywords is Rolf Reber (professor at Department for Psychosocial Science, University of Bergen)

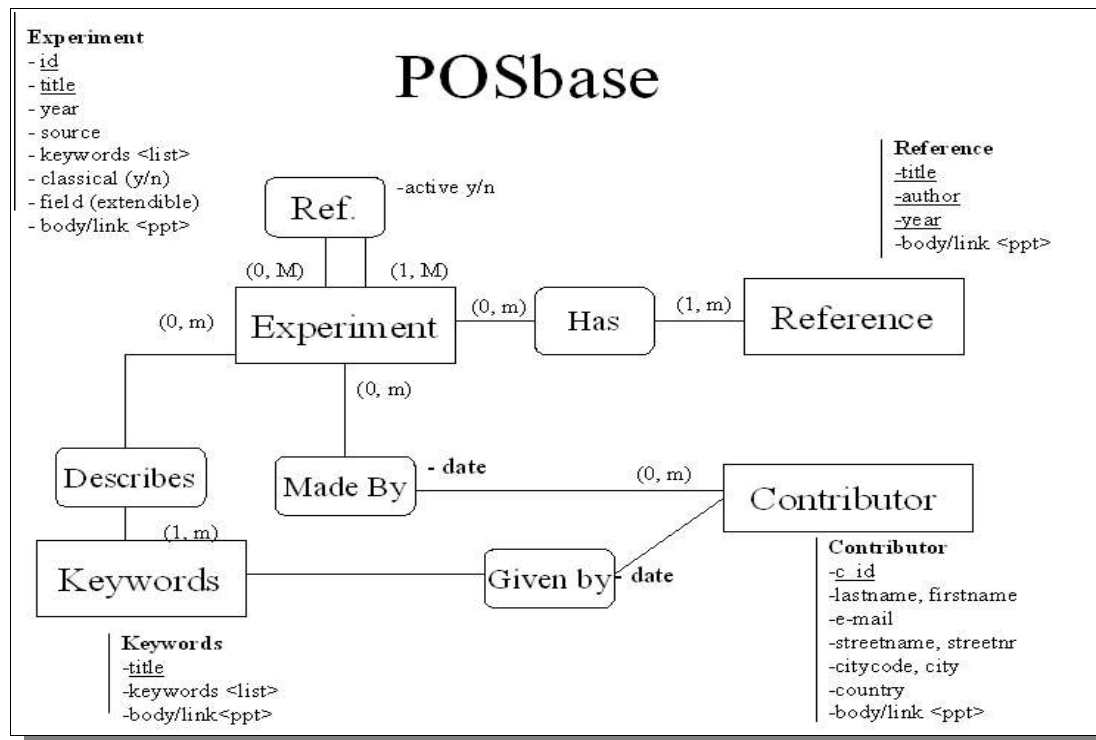


Figure 3.2: ER-model of the Database

The experiments are the main content and each experiment includes fields such as author, year, journal, keyword, and scientific field. Attached to each experiment are at least one reference and several keywords. The reference contains information about the author and the book or other publications. It is possible for experiments to share keywords. A keyword presentation contains a definition of a term or subject. The contributors are the persons who made the contribution. The contributor presentation consists of information about the contributor. Table 3.1 shows an example of the table

structure for our database. This table shows the experiment table.

```
mysql> DESCRIBE experiment;
```

Field	Type	Null	Key	Default	Extra
ID	int	NO	YES	AUTOINCR	
Title	varchar(50)	NO	YES	NULL	
Year	varchar(10)	YES		NULL	
Source	varchar(50)	YES		NULL	
Keywords	varchar(100)	YES		NULL	
Classical	varchar(10)	YES		NULL	
Link	varchar(100)	YES		NULL	

Table 3.1: Structure of “Experiment”-table from the Database

Figure 3.3 shows an example of the experiment “Insensitivity to sample size”. Most experiments have around four slides, one for the basic research question and hypothesis, one for method, one for results (often a table or a figure), and one for conclusions. Slides can include different hyperlinks to other experiments, keywords, the reference and the contributor. The hyperlinks between presentations allow users to surf from one study to the next, find definitions to keywords or to see the reference to the original work. We have marked how the keywords and related experiments are shown within the presentations in red colour. Figure 3.4 shows a keyword that is connected to this experiment.

Mood as information

Conclusion: Keyword Related Experiment

The difference between sunshine condition and rain condition in the control group can be explained by mood-congruence (see Bower, 1981).

However, if weather as the source of mood is made known to participants, the difference between sunshine and rain conditions disappears. This finding **can not be explained** by mood-congruence.

Schwarz and Clore reasoned that people use their **mood as information**: If asked whether they are happy with their own life, they ask themselves: „How do I feel about it?“ This results in higher life satisfaction when mood is positive rather than negative. However, if people know about the source of their mood (weather), they no longer use mood as information for their judgment of life satisfaction.

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Figure 3.3: Example of an Experiment (PowerPoint)

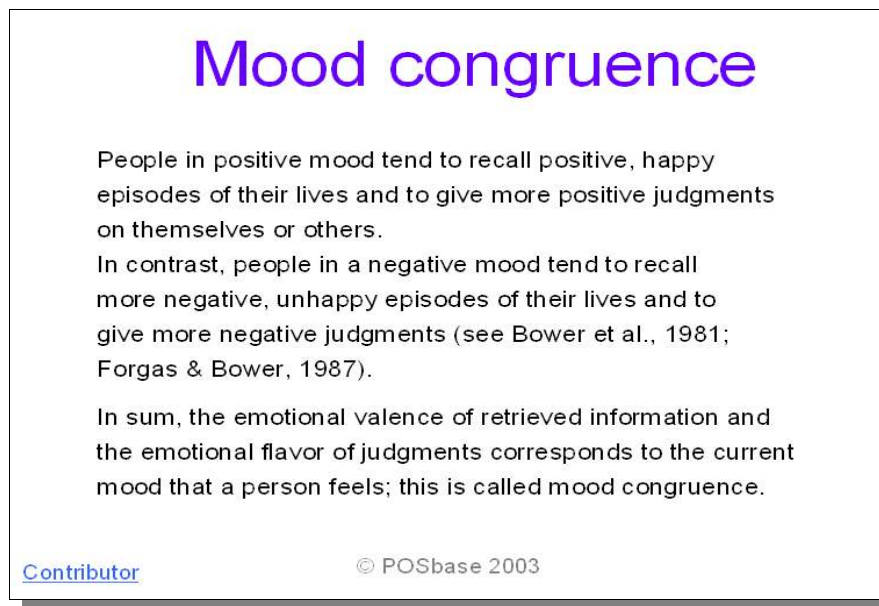


Figure 3.4: Example of a Keyword (PowerPoint)

3.2.2 Interface Design

We started with drawing sketches by hand and then with Microsoft Visio to visualise how the functionality could be implemented, and what the site structure would look like. Drawing sketches helped us communicate with the target user and agree on a template to be used for all pages to ensure a consistent design. Figure 3.5 - 3.7 show some of the stages in this process.

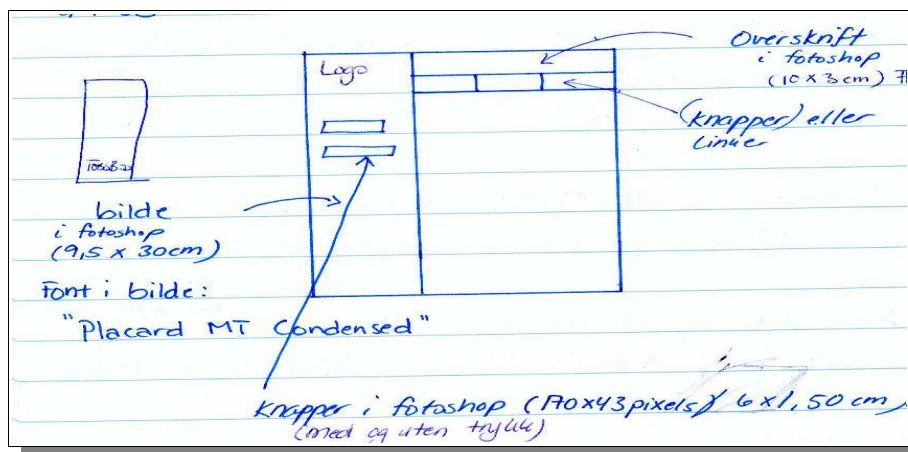


Figure 3.5: Sketch of the Layout

Figure 3.5 indicates the layout of the website as we planned them. It includes a vertical menu at the left side showing the functionality and structure of the site and options

within each page (i.e. different search methods) at the top.

The drawing in Figure 3.6 shows a draft made in Microsoft Visio and visualises the content and functionality of advanced search. Figure 3.7 shows how we planned the insert page for adding experiments to the database. The administration pages would contain insert, update and delete pages. We found the insert option most important, in order to visualise the semantic information of the database as well as adding content to it.

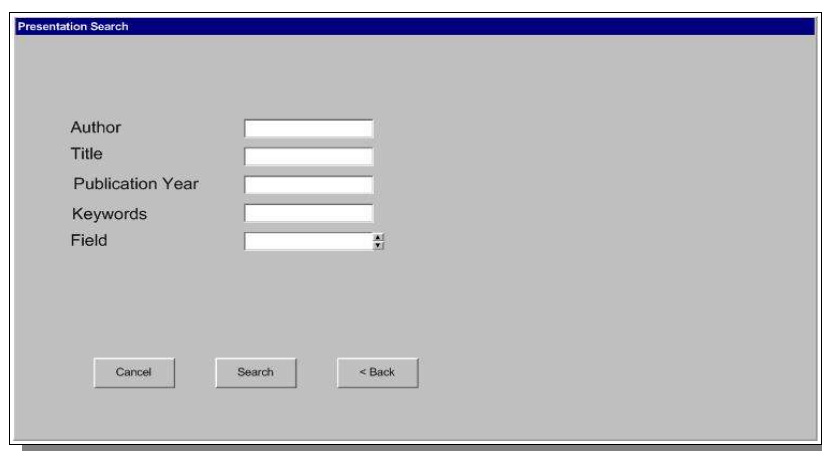


Figure 3.6: Sketch of Advanced Search (Visio)

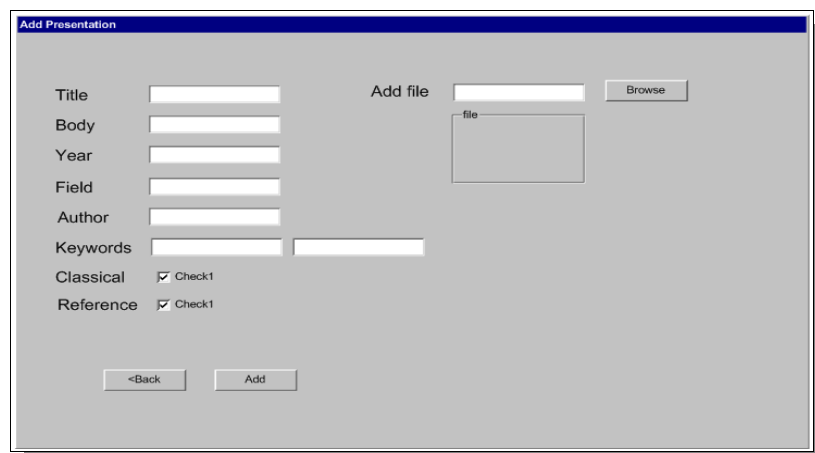


Figure 3.7: Sketch of Insertion Page (Visio)

3.2.3 Functionality Design (Static Prototype)

As the design phase proceeded we received feedback from our target user concerning various changes such as adding new fields in the database, changing the page layout and the organisation of the site structure.

In the design phase, we implemented a static prototype in HTML so that the team and the target user could get a concrete view of how the system would look and feel. This also made it easier for us to communicate our ideas to the user, and for him to review and give us feedback. The static prototype always gave the same search result and is presented in Figure 3.8. The layout was based on the sketches presented in section 3.2.2 about the interface design.

In the early stages the name of the system was TossBase (Teaching of Scientific Studies base). During the planning and design we got some feedback that this name could give negative connotations, and the name was therefore changed to POSbase.

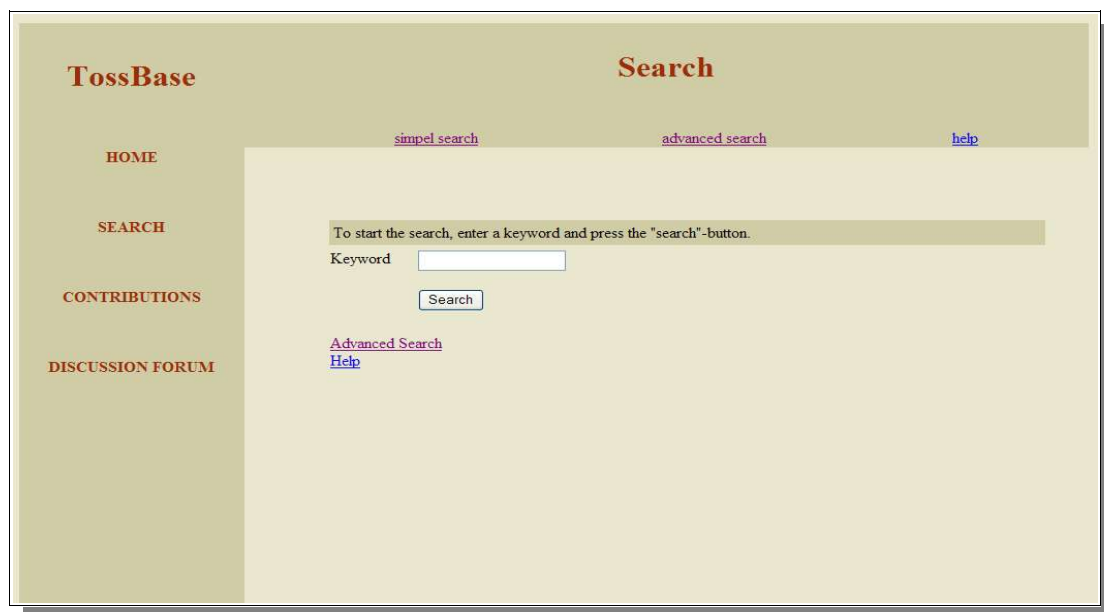


Figure 3.8: Static Prototype (1)

This prototype helped us show the expected layout, navigation plan, and site structure. According to Shneiderman (1998) it is very important to have direct interaction with the users during this phase. We found the static prototype very useful during the design

phase, and it revealed many undefined requirements on:

- Colours
- Organisation of information within each page
- Site structure
- Database structure

We decided that the colours on the site should be in a bright-blue colour with black text so that the text was easy to read. We used standard colour on the hyperlinks, to make it easier for the users to see which hyperlinks they had and had not entered. The hyperlinks were blue before entered and purple after. The decisions made concerning the colours were guided by advices from Dix et al. (1997) and Nielsen (2000) as described in chapter 2. The evaluation of the static web-pages together with other guidelines resulted in the page-layout shown in Figure 3.9.

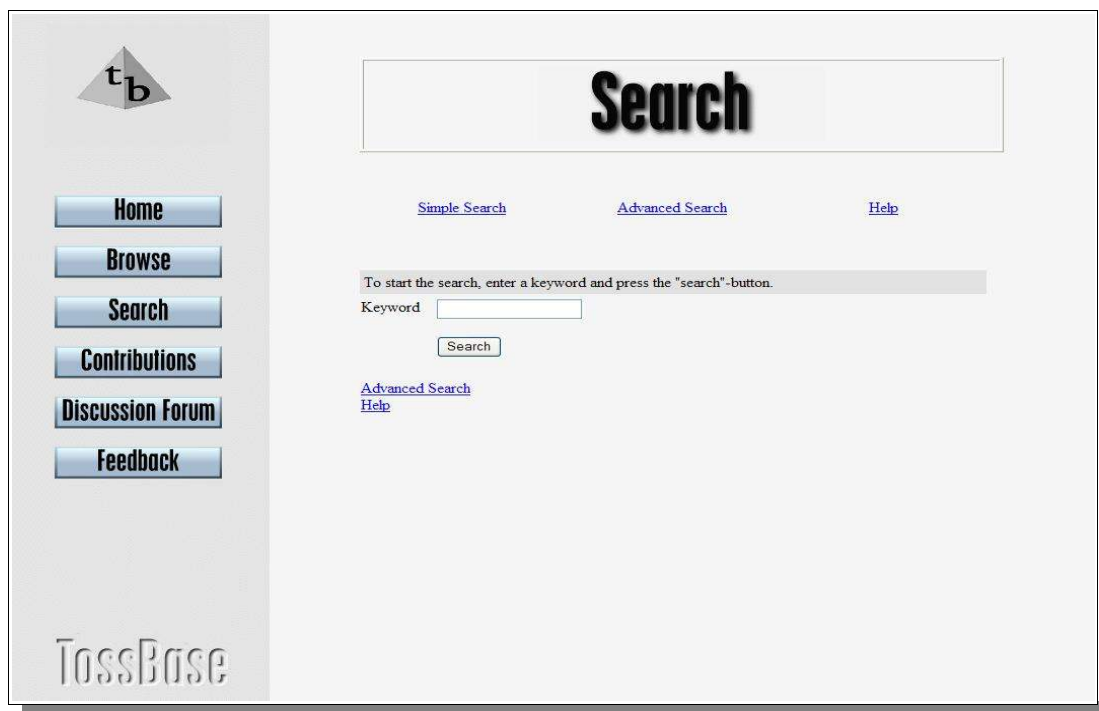


Figure 3.9: Static Prototype (2): Search

One of the most important functions that the system would offer was searching. This also includes presentation of the search result. From the planning phase we had decided that the result should be based on the science experiments as this is the main

content of the database. When searching in the database, only the experiment titles were shown in the search result. When selecting an experiment, further information about relevant keywords and references would be presented. An example of the information connected to an experiment is shown in Figure 3.10 below.

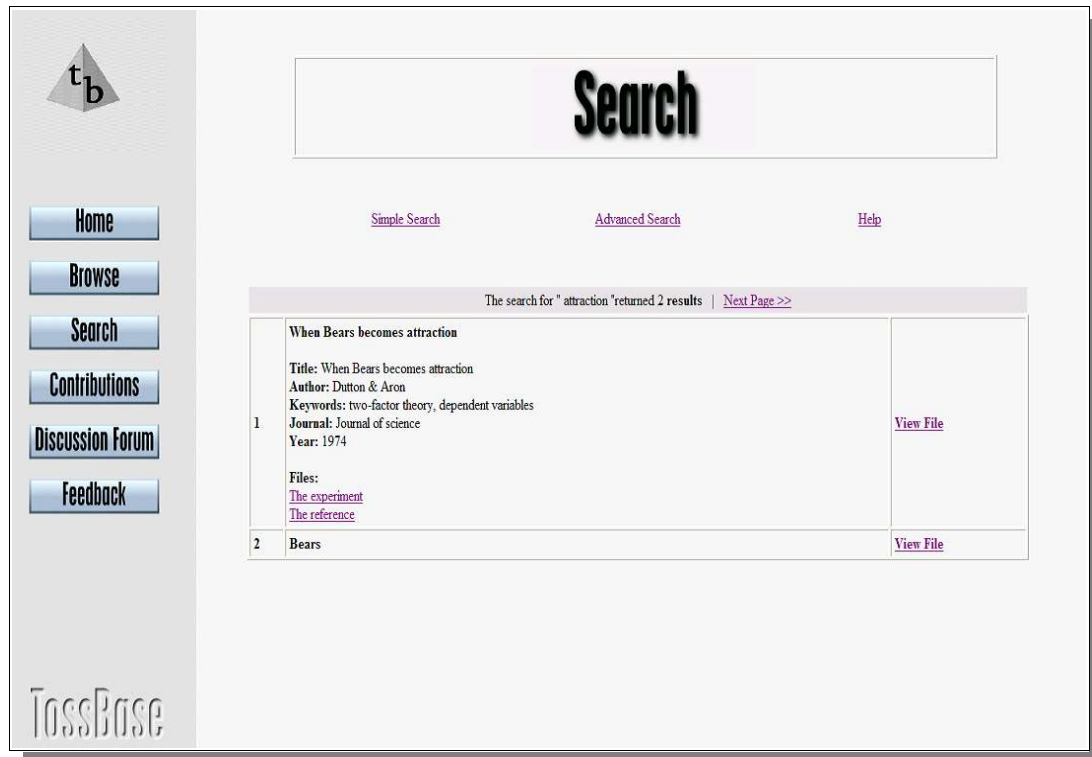


Figure 3.10: Static Prototype (2): Search Result

We also kept a log of the users. With this feature we could track the users and see how often they used the system. This would also enable us to tell the advanced from the undergraduate students. They were encouraged to use their student numbers as login names.

The layout and prototype in Figure 3.9 and 3.10 were furthermore evaluated and additional changes were suggested regarding menu and headings. The final layout is presented at the end of section 3.2 in Figure 3.12. At this stage we decided to have a menu on top of every page, and the navigation should be horizontal rather than vertical. To enhance orientation the current page was highlighted on the menu-bar. We also changed the headings on every page, as they could be a bit blurry to read.

3.2.4 Deciding on Development Environment

Before implementing the system, we had to decide on the development tools to be used for the application. These include DBMS, programming language and system architecture.

DBMS

We mainly considered two types of database management systems (DBMS). One was Oracle and the other was MySQL. We considered advantages and disadvantages of both systems. Important features for our application are:

- Support for web-applications.
- Freedom in choice of platform and development tools.
- Support for rapid prototyping.

Originally we wanted to enable content search in the database. Even though Oracle can manage content search in some documents/files, it is unable to handle content search in PowerPoint files. This made Oracle less suitable for our needs. As we did not find an alternative DBMS that could manage content search in PowerPoint presentations, we decided that keywords could be added for each experiment. In this way the semantic information about each experiment captured in the database were expanded.

Oracle is an expensive DBMS. Another disadvantage is that it does not allow for external development tools. Because of this we found MySQL, which is open source software, the best alternative for our needs. MySQL is moreover adapted for fast searching in web-applications and easy to move to other platforms.

Programming Language

PHP (Hypertext Pre-processor) is a popular tool (language) that is especially suited for web-development and can be embedded into HTML. The “pre-processor”-definition basically means that PHP handles data before it becomes HTML. It allows flexibility in a system and also has the opportunity to interact with databases and files. PHP was written specifically for dynamic web-page creation, which makes it possible for the

server to dynamically generate the HTML code. Some examples are that it is possible to present different information depending on time or to check if the user has entered the web-page before or not. When we chose to use MySQL as the DBMS we also found the combination with PHP a natural choice, as this allows for the creation of dynamic pages based on database searching.

System Architecture

We used local servers during the development. The system architecture is shown in Figure 3.11. The back-end database is implemented in MySQL. The web-pages are written in HTML and served by Apache server. The communications between the database and the web-pages are managed by PHP scripts.

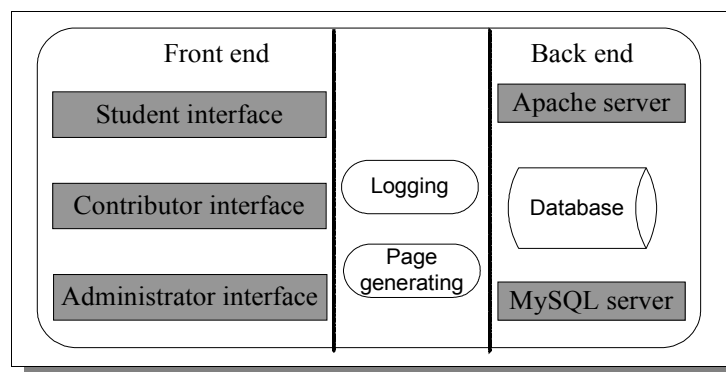


Figure 3.11: POSbase System Architecture

3.2.5 Summary of the Design Phase

As already mentioned, the design phase and the implementation phase overlapped a great deal, and some of the design issues were agreed upon after the implementation had started and demanded changes to the system. The list below summarises the outcome of the design phase.

- Database structure (ER-model)
- A clear interface to be consistent for every page (colour, fonts, headings, logo)
- Functionality to be offered (search, how to present the result, login)
- Web site overview; what pages were needed and their structure
- Navigation (menu, hyperlinks and search)

- Decided on development environment (DBMS, programming language and system architecture)

The final layout is presented in Figure 3.12. The horizontal menu shows the alternative options that the user has when opening the website. When an option is chosen, that page is highlighted (here Search is highlighted). This menu is always present and the idea was to make navigation and orientation easy.

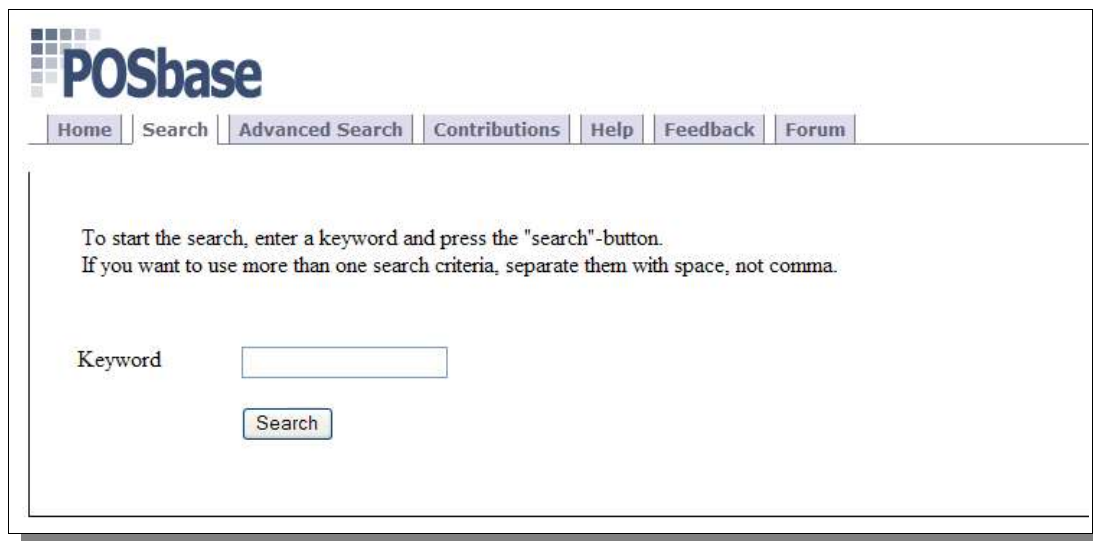


Figure 3.12: Final Layout

“Home” is the name of the starting page, which is the first page the user sees when entering the site. This page introduces POSbase and the main goal behind the project. “Search” and “Advanced search” give the user the opportunity to search for the content in the database. “Help” is the page where users can find information on the different functions if they have any problems. These pages contain examples of how to do a search and where to find relevant information. In order to get feedback from users concerning technical issues or other problems with using the system, we designed a “Feedback” page. “Discussion Forum” is a forum made especially for the students who attended the courses. This can be a way of sharing questions or knowledge with fellow students. These pages are discussed further in the next section.

3.3 Implementation (Dynamic Prototype)

The implementation phase had two main concerns that decided the order of which the functionality was to be implemented:

- Degree of importance
- Resources in matter of time

As we had a tight schedule, we considered the effects if some parts of the system were not implemented. We made sure it would not affect any important qualities in the system.

Implementation was done in several iterations, where the layout of the pages and functionality were continuously revised. The list below shows the order in which we completed the implementation.

1. Site structure and page layout (static prototype)
2. Database
3. Administration pages
4. Student Pages (Dynamic prototype)
 - Search – simple and advanced
 - Presentation of the search result
 - Discussion Forum
 - Log in
 - Help
5. Contribution pages

The static prototype and database were explained in the design phase. Here we describe the rest of the implementation according to the list above.

3.3.1 Administration Pages

The administration pages were made so that the administrator could insert, update and delete presentations in the database. These pages were not available for others; they had separate login pages where only the administrators had access. Web-pages were

made for each type of presentation like experiment, keyword, reference and contributor. Figure 3.13 shows the insertion page for adding an experiment to the database.

These pages had a lower priority than the user pages as they mainly were made to insert content into the database and because they would not be evaluated within the scope of this master thesis. After finishing the first version of POSbase, there was still some functionality that was missing, like the opportunity to delete the content in the database.

The screenshot displays the POSbase web application interface. At the top, there is a logo for 'POSbase' and a navigation menu with buttons for 'Experiment', 'Keyword', 'Contributor', 'Link', 'Search', and 'Upload'. Below the menu, there are links for 'Log out', 'Update', and 'Insert'. The main content area is titled 'Fill in the blank fields and press submit' and contains several sections: 'Contributor' with a dropdown menu and a link to 'Add new Contributor'; 'New Experiment' with fields for Title, Year, Source, and Keywords; 'Field' with three dropdown menus and a link to 'Add new fields here'; 'Classical' with a dropdown menu; 'File' and 'Printout File' with text input fields and 'Browse...' buttons; and 'Reference' with fields for Author, Title, Year, and File. A 'Submit' button is located at the bottom of the form.

Figure 3.13: Insertion of Experiments

3.3.2 Student Pages

Search

After implementing the database we added a few experiments in order to continue on the search functions. The dynamic prototype is shown in Figure 3.14 and 3.15, and it was based on the design and functionality requirements. This step was particularly useful for implementing the queries and deciding on search criteria.

POSbase

Home Search Advanced Search Contributions Help Feedback Forum Log out

Fill in one or more of the search fields and press the search button

Title

Keyword

Source

Year

Field

Author (last name)

Contributor (last name, first name)

Figure 3.14: Dynamic Prototype: Advanced Search

The search is divided into simple and advanced search. The main difference is that in simple search the user only needs to enter *one* search criterion whereas in advanced search the user has *several* possibilities which are presented in Figure 3.14. Simple search may return more hits than desirable as there are few opportunities to limit the search result. Many hits can be an advantage if the user is not sure what he/she is looking for. In the advanced search the user has the opportunity to search with more than one criterion. The more criteria, the narrower is the result of the search. Advanced search is good when the user knows exactly what he/she is looking for.

Search Result

During the design phase we decided what the search result would contain some information about the current experiment. This is shown in Figure 3.15. The search

result was implemented to show a list of experiment names, when double clicking on these, they will show further information about the experiment, like linked keywords or references. The search functions and layout were somewhat changed after the first evaluation and are therefore discussed in more detail in chapter 6.

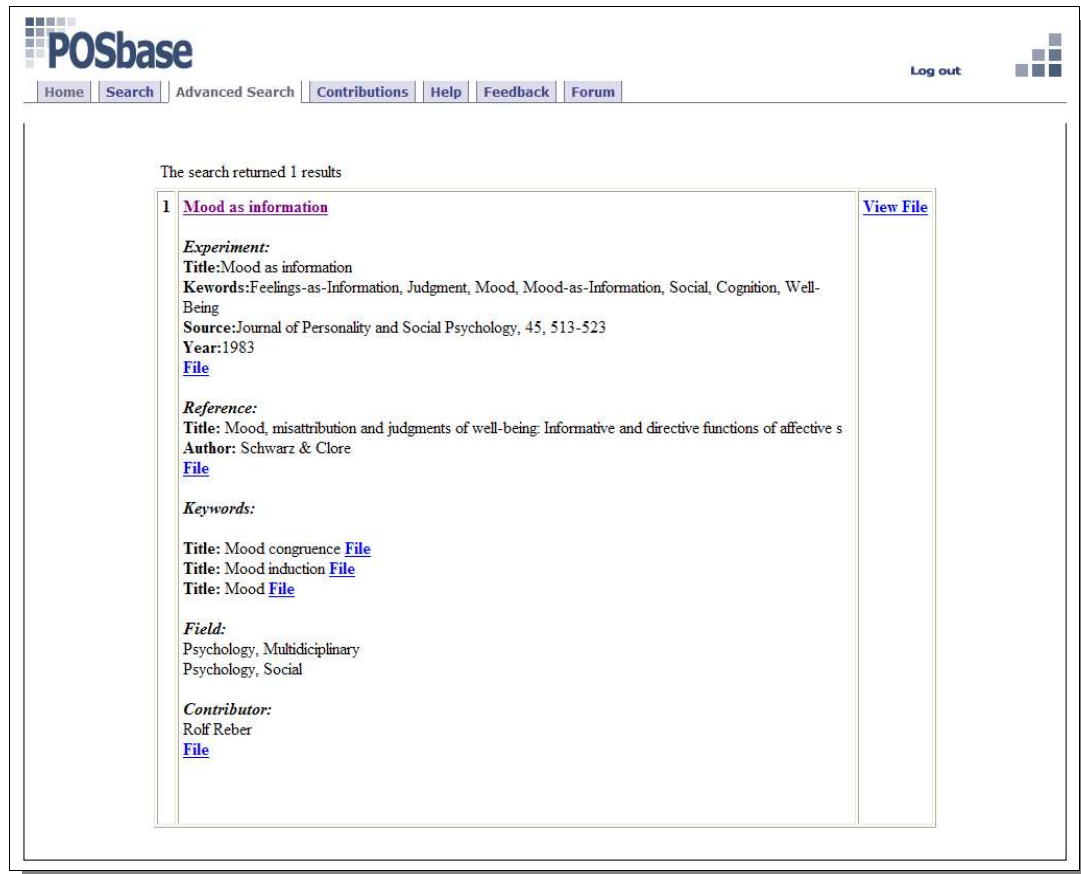


Figure 3.15: Dynamic Prototype: Search Result

Discussion Forum

We saw the advantage of letting the lecturer have the opportunity to give feedback and provide topics for discussion through a discussion forum. It would also be possible to give feedback during the lectures or through tasks/questions in the lectures. The discussion forum would also give the students the opportunity to discuss and comment on the content of the database (experiments, definitions, literature, etc.).

The discussion forum was a freeware product, “Phorum Speed & Power”, found at <http://phorum.org>. We integrated this forum into our application, shown in Figure 3.16.



Figure 3.16: Discussion Forum

Login

To have the opportunity to track the different user, we made a login-page where the students could register and login with their student number. The user had to create a username and a unique password to enter POSbase, and they were encouraged to use their student numbers or student e-mail as usernames. In this way we could see which user-group used the system most and later connect them with the questionnaires. We also registered time and date every time someone logged on, so that we could keep track of how often they used it. Figure 3.17 shows the login window.

Figure 3.17: Login

Help

The help pages were made to explain the system and contain answers for different questions on how to use the system. One example of their use is to assist searching. The users could find examples of search strings that could either expand or reduce the

search result.

The pages were made in a list form, as the content was not considered large enough to need a search engine. These pages were also slightly changed after the first evaluation. Figure 3.18 below shows the help page.

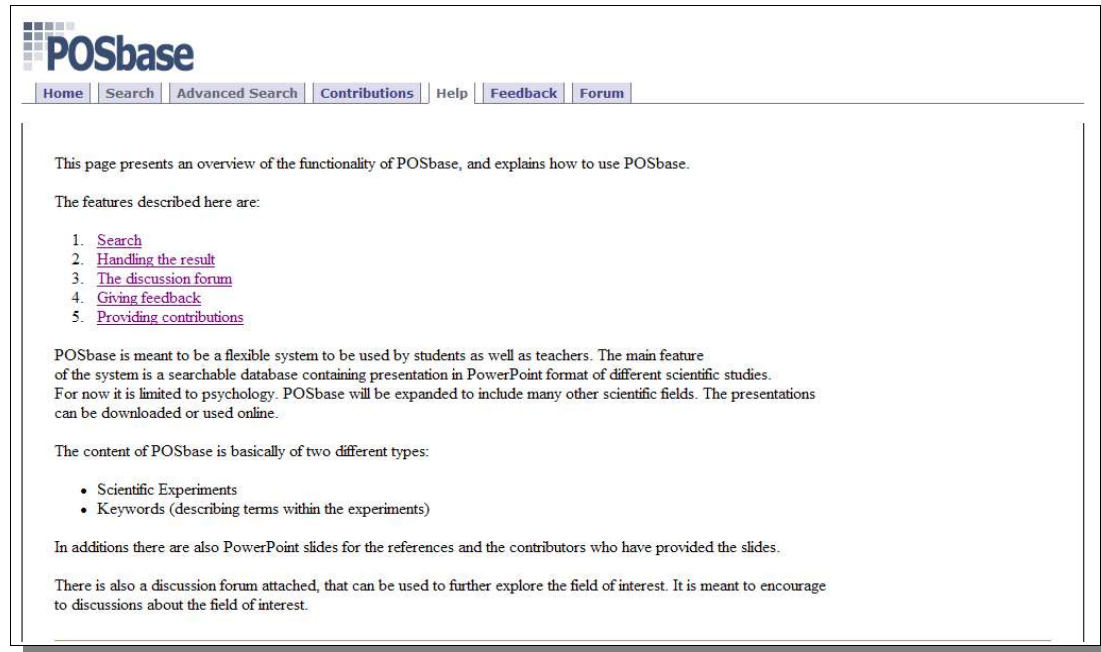


Figure 3.18: Help

3.3.3 Contributor Pages

Possible contributors could enter these pages, fill in a form and submit their contributions to POSbase. Contributors include professors, lectures and researchers in cognitive psychology who want to share their presentations/experiences with colleagues. They can use POSbase to upload their own presentations, to download others' presentations, to search for relevant experiments and literature. The contributions would be revised by the administrator before added to the database.

When POSbase was published these pages were not completely ready because they had a lower priority in our project. They just explained the general idea and provided an e-mail address where people who found it interesting could contact the system administrator.

3.3.4 Problems

The implementation was done without any major difficulties. It was constantly tested by a number of students at Department of Information Science before it was released. However we had some start-up problems the first few days when the students started using POSbase. This was due to lack of information to the users about which presentations were important for each group. To solve this, the lecturer of the courses published a list of the names of the presentations that was going to be used to each lecture.

Another problem that turned up was the handling of PowerPoint by the browsers. To be able to use the hyperlinks within the PowerPoint presentations in Opera and Netscape, one has to run a slide show. Unfortunately we had not tested this thoroughly enough, and were not aware of this before the system was released. This problem could not easily be solved. We therefore published a notice on the forum explaining how they could run a slide show to access the hyperlinks.

Login did not work optimally in the first version of POSbase. This was due to time constraints. We had to include an unnecessary “click-here-page” after login. This was removed in the second version where users entered the system directly after logging in.

3.4 Chapter Summary

The development of POSbase was done following the three stages that Alessi and Trollip (2001) suggest; planning, design and development. The process was module-based, which yields higher flexibility of collaboration and more independent design development.

During the planning we mainly identified the requirements for the system. This was done by defining the users, context and system entities. We furthermore considered the learning methodology.

The design and implementation phase overlapped a great deal. Here we decided on database structure and what functionality the system would offer. We also chose layout and interfaces for different pages.

4. Research Design and Methods

This research is intended to provide a comprehensive evaluation of POSbase. The aim for this evaluation is to elaborate on the research question presented in chapter 1:

What new design challenges can be found from a formative evaluation of POSbase?

This research was designed based on the theoretical discussion presented in chapter 2.

4.1 Methodology

Methodology refers to how researchers approach their research questions. A methodological approach includes issues such as what cases to study, how to collect the data, what form of analysis one wants to use. A methodology can furthermore only be more or less useful (Silverman, 2001).

Methods are techniques used to collect data and they take on a specific meaning according to the methodology in which they are used (Silverman, 2001). Researchers can choose between qualitative or quantitative methods or a combination of these when conducting their studies. The properties of the data collection are often characterised as being complete for qualitative methods vs. accurate and precise for quantitative methods. This means that qualitative data provides a *deeper understanding* of the issues concerned while quantitative data provides for a *greater deal of comparability*. Quantitative studies are therefore more structured than qualitative studies, which, on the other hand, are based on flexibility in the design. Because of more standardised analysis techniques, quantitative studies can usually manage bigger sets of data (Grønmo 1996). Grønmo (1996) emphasises that the two approaches should not be treated as conflicting, and that the terms should be used as a characteristic of the properties of the data collected and analysed rather than for the methods employed in the study.

The main consideration when choosing what methods to use is how well the methods will help us discovering what we want, that is, how useful will the methods be in providing answers for the research question. The second consideration is practical limitations caused by circumstances such as time limits, economic limits, level of experience of the researchers etc.

The goal of our evaluation is to investigate the design challenges for a web-based hypermedia system used in combination with traditional lectures, and in this way provide guidelines for further improvements of POSbase.

Based on the discussion in section 2.3 and the above considerations, we decided that the most appropriate for our task was to use a combination of methods; questionnaires, interviews, observation and logging. Furthermore, we found it useful to gather both quantitative and qualitative data for our analysis. This is usually referred to as triangulation (Grønmo, 1996). The advantage is that one can overcome some of the weaknesses of the different data.

We used a formative evaluation as POSbase is a prototype under development. According to Flagg (1990) formative evaluation aims at informing the decision-making process during the development of an educational program with the purpose of improving it.

4.2 Evaluation Design

POSbase was evaluated in four courses at the Department of Psychosocial Science at the University of Bergen in autumn 2003 and spring 2004. Two of the courses were introductory cognitive psychology courses with first-year students. The other two courses were cognitive psychology courses for third-year students (selected from introductory courses based on exam results) who had basic knowledge about cognitive psychology (see Table 4.1). In the beginning of each course, there was a training session where POSbase was introduced to students. The project team demonstrated the various functions of POSbase and how they could be used. Each course lasted for

about 3 weeks. Presentations from POSbase were used in the lectures, more or less as lecture notes, and questions and related information were posted on the discussion forum. Students used the discussion forum to share information relating to the use of POSbase and the course content.

The subjects in the evaluation were therefore students who had used POSbase in their education in combination with traditional lectures. The use of POSbase was not compulsory for the students, but strongly recommended.

Setting

We have conducted two evaluations of POSbase. The first evaluation was in October 2003 and the second in February/March 2004. Both evaluations were conducted with one introductory course and one advanced course (see Table 4.1). Between the two evaluations some improvements were implemented based on the findings from the first evaluation.

<i>Evaluation</i>	<i>Course</i>	<i>Course description</i>	<i>Number of students</i>
1: Autumn 2003	PS103	Introductory	316
	PSYK331A	Advanced	36
2: Spring 2004	PSYK101	Introductory	881
	PSYK331A	Advanced	36

Table 4.1: Course Overview

The questionnaires were distributed in the last lecture of the courses. Due to the fact that many of the students present in the lectures had not used POSbase enough to answer the questionnaires, we did not get as many answers as we had anticipated. To compensate, we also distributed an electronic questionnaire, identical to the former, to the course mailing list.

To get subjects for the interviews, we asked for volunteers by email and during the lectures. Those who were interested in the interviews either approached us during a lecture or replied to the email we sent out. Before the interviews the users were asked

to perform some pre-defined tasks. In this way we could observe the users interact with the system.

A user tracking tool and a log file were used to collect data on number of unique users and frequency of use. This was done in order to verify the subjective opinions found from the questionnaires and interviews.

4.3 Data collection

We investigated the research question from three different aspects, see Table 4.2. Frequency of use is the basis from which we can evaluate POSbase. We chose to look at usability and user satisfaction as separate aspects in the evaluation. This was also discussed in section 2.3.3.

<i>Aspect</i>	<i>Description</i>	<i>Sub Questions</i>	<i>Method</i>
1	Frequency of use	<ul style="list-style-type: none"> • How many students used POSbase? • How often and how much did the students use POSbase? • When did they use it? 	Log Questionnaire
2	Usability	Concerning the different functions provided by POSbase.	Questionnaire Observation Interview
3	User satisfaction	Subjective opinion about: <ul style="list-style-type: none"> • Functionality and its usefulness • The content • The combination of traditional lectures with web-based learning 	Questionnaire Interview

Table 4.2: Research Aspects

As argued earlier we wanted to gather both qualitative and quantitative data for our analysis. We used questionnaires and logs to provide quantitative data, while the interviews and observations provided us with more qualitative data. Table 4.3 shows an overview of the different methods used.

Method	Description
Log	Through login and external user tracking
Questionnaire	Structured, mostly ratings based on scales, but also some open-ended.
Interview	Semi-structured
Observation	Predefined tasks of system use

Table 4.3: Method Overview

4.3.1 Logging

In our evaluation of POSbase, we used logging to collect data about the number of users and how often they entered the system. A log provides us with objective and accurate data about user patterns (aspect 1 in Table 4.2). This information could not easily be captured by the other three methods.

The advantages of logging and tracking are that they are cheap, unobtrusive and can be used for over a period of time (Dix et al., 1997). In our database we had one table consisting of username and an encrypted password and one table consisting of username and log-in information such as date and time. This information assisted us in verifying the findings from the questionnaire, especially as we encouraged the students to use their login-name on the questionnaire so that we could compare them with the log-information.

We also used a free tracker from eXTReMe that registered information about unique visitors, geographic location and system tracking. Table 4.5 shows an overview of the eXTReMe tracker functionality.

POSbase		Edit
URL:	http://nattergal.ifi.uib.no/posbase	
Counting since:	14 October 2003 / 15:38	
Current report:	30 Mar 2004/14:53	
Summary	: Totals and Averages	
Unique Visitors	: Day Week Month Hours of the Day Days of the Week	
Incl, Excl, Reloads	: Day Week Month	
Geo Tracking	: Domain Country Continent	
System Tracking	: Browsers Operating Systems Screen Resolutions Screen Colours	
Referrer Tracking 1	: Last 20: Unsorted Email Search engines Queries Usenet Harddisk	
Referrer Tracking 2	: Totals: Sources Search engines All Keywords All Website Referrers	

Table 4.4: eXTReMe Tracker Overview

4.3.2 Questionnaire

The advantage of questionnaires is that we can reach many students, and we can to some degree generalise from the result. Other advantages are that written user surveys are familiar and inexpensive (Shneiderman, 1998).

Some critical factors in conducting a questionnaire-based research are (Remenyi et al. 2002):

1. The design of the questionnaire.
2. The method by which the questionnaire is to be administered.
3. The choice of sample.

Administration and choice of sample have already been described. Here we focus on the design. As usability and user satisfaction are a considerable part of our research question, we designed the questionnaire in order to include these issues. A large part of our questionnaire was based on QUIS (Questionnaire for User Interaction Satisfaction). QUIS was developed by Shneiderman and later refined by Norman and Chin (Shneiderman, 1998). It measures the user's subjective rating of the human-computer interface (Chin et al., 1988). These ratings are based on scales from 1 to 9, with adjectives on both ends that are always positioned so that the scale goes from *negative*

on the left to *positive* on the right. Chin et al. (1988) evaluated this questionnaire and found that the reliability was quite high, Cronbach`s alpha=.94. Figure 4.1 below shows an example from our questionnaire.

11. Learning to navigate the system

Difficult Easy

1 2 3 4 5 6 7 8 9 not applicable

Figure 4.1: Questionnaire: Question 11

According to Remenyi (1998) closed-ended questions simplify the collection and make the task of the respondents easier. Our questionnaire included mainly closed-ended questions and scales, based on the guidelines from both Shneiderman (2001) and Remenyi et al. (1998). Figure 4.2 shows question 32 in the questionnaire and illustrates the way we designed closed-ended questions that were not based on scales.

32. The content of the POSbase presentations was:

Difficult to understand

Easy to understand

Interesting

Boring

Informative

Irrelevant not applicable

Other.....

Figure 4.2: Questionnaire: Question 32

We also had some open fields for comments in the questionnaire where the respondents could supplement their answers, see Figure 4.3.

Comments/suggestions to the discussion forum:

.....

.....

Figure 4.3: Questionnaire: Comment field

All the examples from the questionnaire (Figure 4.1-4.3) are translated into English. The full version is given in appendix A.

Closed ended questions makes comparability easy. To facilitate more for comparability, each question was categorised according to the aspect it relates to. This overview is presented in Table 4.5. The right column refers to the question-numbers in the questionnaire, see appendix A.

Aspect	Question from questionnaire
1: Frequency of use	4-6, 13, 15, 19, 25
2: Usability Issues	8-12, 16, 20, 22-24
3: User Satisfaction	7, 14, 17, 18, 21-23, 26-33

Table 4.5: Questionnaire Overview

After the questionnaire was designed we tested it on a few fellow students at the Department of Information Science and at the Department of Psychosocial Science. The goals of this test was to check if the questions were clear, if they covered our research question, and how long time the subjects needed to complete the questionnaire.

4.3.3 Interview

Questionnaires are good for answering *what questions*, but more limited when it comes to *why questions*. Face-to-face interviews enabled us to get a deeper understanding of particular problems and advantages with the system. The students commented on things we missed in the questionnaire and *why questions* were elaborated on.

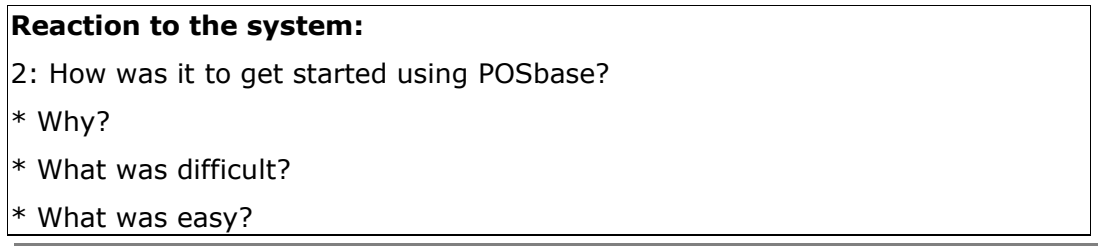
Interviews are a good way of getting insights into about people's experiences (May, 2001). May describes semi-structured interviews as useful when the researcher has a specific focus for their interviews. He also emphasises that the context of the interview should be clear, and that this is an important aspect of the process.

With the interviews in our evaluation, we wanted to gain a deeper understanding of the

data collected by the questionnaires and the students' experiences with POSbase (problems and advantages).

Interviews that are classified as structured or semi-structured often require an interview guide (Grønmo, 1996). An interview guide is a list of predefined themes or questions that are representing the context of the interview. The interviews we conducted were semi-structured. We used an interview guide to capture the important issues, but the questions were open-ended and encouraged the respondents to tell their own story and experiences. When the answers were vague or ambiguous, we asked additional questions in order to clarify statements. Each interview lasted for approximately 20 minutes.

Figure 4.4 shows an example from the interview guide. The interviews were conducted in Norwegian, and the extract below is translated into English. For the complete interview guide see appendix B. The interview guide was mainly designed to capture issues concerning user satisfaction (aspect 3 in Table 4.2) and elaborate on why they were satisfied/dissatisfied with different features.

A rectangular box with a thin black border containing text. The text is left-aligned and includes a bold heading followed by a numbered question and three bullet points.

Reaction to the system:
2: How was it to get started using POSbase?
* Why?
* What was difficult?
* What was easy?

Figure 4.4: Extract from the Interview Guide

4.3.4 Observation

Observation of the users while they interact with the system is a good method for gathering information about actual use, *how-questions*. Furthermore this method can provide us with information about problems that are difficult to uncover with questionnaires and interviews, and problems that the user is not aware of. The observations were particularly good for understanding usability issues (aspect 2 in Table 4.2).

Grønmo (1980) describes *structural observation* as focusing on chosen events or actions. Structural observation is a direct observation of the actor, where the observer does not interact. This type of observation is a quantitative method which can be used both in experimental settings as well as more natural ones. Another type of observation is *participatory observation* where the researcher is part of the social processes studied. This observation yields qualitative data (Grønmo, 1996). As the subjects in this evaluation were given predefined tasks the observation can be called structured, but on the other hand we wanted the freedom to interact and communicate with the subjects during the observations, so we therefore classify it as being between structured and participatory observation.

Dix et al. (1997) claims that simple observation seldom is sufficient to determine how well the system meets the users' requirements. He suggests that the users therefore should be asked to elaborate their actions by "thinking aloud", and in this way describe why they take action and what they are trying to do. Simple observation does not yield insight into the decision processes and attitudes, and "thinking aloud" can compensate for this. While performing the predefined tasks the students were encouraged to think aloud while they interacted with the system. In this way we could easier get an understanding of their choices and reasoning during the interaction. The tasks were alike for all students and consisted of searching and finding two experiments and two keywords.

4.4 Chapter Summary

POSbase was evaluated in four courses at the Department of Psychosocial Science at the University of Bergen. We chose a triangulation of methods in our evaluation; questionnaires, interviews, observations and log. To be able to answer our research question, we emphasised issues concerning system usage, usability and user satisfaction. The log mainly provided us with information about system usage, questionnaires and interviews about usability and user satisfaction, and the observation mainly concerned usability.

5. Analysis and Findings

In this chapter we analyse the data collected during the two evaluations and present the findings. The main goal is to elaborate on issues that help us answer our research question and discover possible improvements that are needed for POSbase. This chapter is divided into four parts containing the data processing, first evaluation, second evaluation and then comparing the two evaluations.

5.1 Data Processing

We distinguish between the activities of organising the data and the activities of interpreting and adding meaning to the data. The way that the data material is treated has great implications for the degree of reliability that can be ascribed to the findings. Before we start presenting our findings, we shortly explain how we processed our data. This was done in the same way for both evaluations, and is therefore only explained once.

5.1.1 Logging

From the log we mainly got quantitative data that had to be organised and categorised in order to make it meaningful. We used Excel to organise the data by making tables which summarised system usage. Our log consisted of one table with all the users and another table containing the usernames associated with date and time for logging in.

The eXTReMe tracker had a data processor that both summarised and calculated the average of different numerical data. These data did not need further processing and were used as they were.

5.1.2 Questionnaire

The data from the questionnaire were processed using SPSS (Statistical Package for the Social Sciences). We used this software to summarise and analyse the data. The missing values in the questionnaires were left empty, so that they would not affect the statistical calculations. “Not applicable” was for the same reason left empty. We chose

to use descriptive calculations, which would help us see tendencies and characteristics in the data. This is also due to the level of measurement appropriate for the data, which mainly were of interval scales. We also wanted to see if there were any interesting differences between groups and/or variables. This was determined with t-tests and measuring correlation. Measuring consistency for overall scales was estimated for both evaluations.

5.1.3 Interview

According to Silverman (2001) there are certain ways of achieving reliability for interview data and still pay attention to the narrative structure of the interview. This is done by satisfying the following criteria (Silverman, 2001. p 230):

- Tape-recording all face-to-face interviews
- Carefully transcribing these tapes according to the needs of reliable analysis (not handing the problem over to an audio-typist)
- Presenting long extracts of data in your research report – including the question that provoked any answer.

When transcribing interviews it is important to pay attention to subtle features in the talk, such as trivial, but often crucial, pauses and overlaps (Silverman, 2001).

All the interviews were taped and afterwards transcribed. We also took notes during the interviews. The transcription was done shortly after and as thoroughly as we found necessary, based both on the tape-recordings and the notes. We included breaks and non-verbal gestures, such as pointing to the computer screen. The system was online in the interview room and the subjects could therefore show us things they found hard to describe.

To ensure the anonymity of the subjects, we gave them unique numbers, which we use when referring to them in the thesis.

After the transcription we read through them one by one and tried to recognise similarities. We also made a summary document, containing all the answers organised

according to the different aspects given in Table 4.2. As this document proved somewhat long and over-complex, we also made tables arranged by important themes discovered in the interviews and categorised as positive or negative statements. These documents and examples of the transcriptions are given as appendix E and D respectively.

5.1.4 Observation

The observations were done right before the interviews and in the same room. Because of this we had them taped. We also took notes during the observations. Shortly afterwards we summarised the experiences in a document. The observations were transcribed in much the same way as the interviews, the only difference was that we included more comments that described the subjects' behaviour and actions. These documents therefore have a more narrative form and proved sufficient for the analysis, see appendix F.

5.2 First Evaluation

Here we briefly present the POSbase prototype that was the foundation for this evaluation, and then we present the findings.

5.2.1 Prototype Version 1

The common features and architecture of POSbase were shortly explained in chapter 3. In this section we describe the distinctive characteristic of the first prototype version, used in the courses at psychology October 2003. These characteristics are:

- The search
- Presentation of the search result

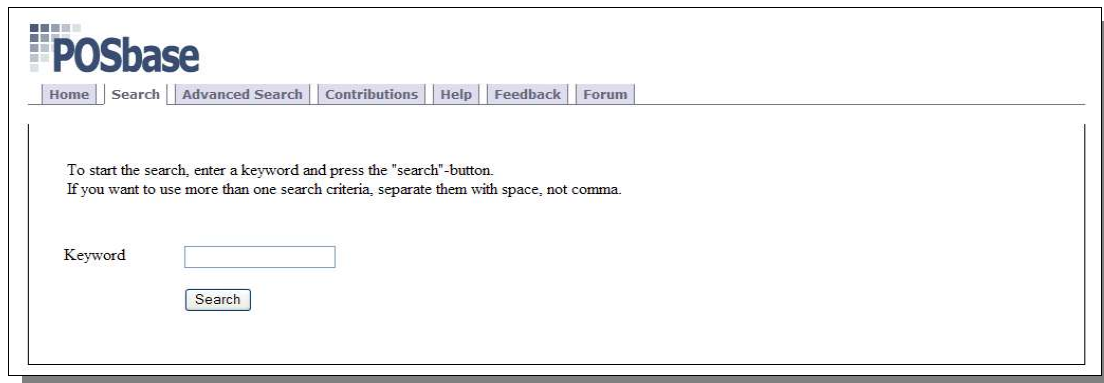


Figure 5.1: Simple Search

In the first prototype the search only provided looking for experiments, see Figure 5.1. The reason was that the students should start from an experiment and then move on to explore related terms or other experiments. The keywords that were connected to a presentation could either be found when opening an experiment from the result list (see Figure 5.2) or as a hyperlink within a PowerPoint file.

Simple search consisted of one field where the user could type in a word or several words. We did not include the functionality of AND or OR in the search, so including several words would expand the search result. Advanced search could be used for limiting the result, by searching for specific fields like title, author etc. Presentation of the search result is shown in Figure 5.2.

The search result was a list of hyperlinks, displayed in a table, see Figure 5.2. The column in the middle was the title of the experiment and had a show/hide function attached to it. When the hyperlink was clicked, the information relevant for that specific experiment was shown and when clicked again the information was hidden. This made it easy for the user to browse through many different presentations without needing to open each of them. The information presented for each experiment was:

- Information about the experiment (title, source etc.)
- A reference
- Related keywords
- Fields
- The contributor

The search for "1983" returned 2 results | >>

1	Ad hoc categories	View File
2	<p>Mood as information</p> <p><i>Experiment:</i> Title: Mood as information Keywords: Feelings-as-Information, Judgment, Mood, Mood-as-Information, Social, Cognition, Well-Being Source: Journal of Personality and Social Psychology, 45, 513-523 Year: 1983 File</p> <p><i>Reference:</i> Title: Mood, misattribution and judgments of well-being: Informative and directive functions of affective s Author: Schwarz & Clore File</p> <p><i>Keywords:</i> Title: Mood congruence File Title: Mood induction File Title: Mood File Title: Category File Title: Theory-based categorization File</p> <p><i>Field:</i> Psychology, Multidisciplinary Psychology, Social Psychology, Social</p> <p><i>Contributor:</i> Rolf Reber File</p>	View File

Figure 5.2: Presentation of the Search Result

The information about the experiments contained several hyperlinks, called “file” that opened the PowerPoint Presentation. The right column of the search result, «view file», was a shortcut to the PowerPoint Presentation for the specific experiment. Users could also reach keywords, references and related experiments through hyperlinks in the presentations.

5.2.2 Setting of the First Evaluation

The number of subjects that participated in the first evaluation is shown in Table 5.1. The numbers show that there were a higher percentage of advanced students (15 of 36) that used the system compared to the undergraduates (85 of 316). In Table 5.1 we see that there are fewer observations than interviews. During the first interviews we did not have access to an online computer. When this was resolved we also conducted observations.

<i>Course</i>	<i>Number of students</i>	<i>Number of users</i>	<i>Questionnaires analysed</i>	<i>Interviews conducted</i>	<i>Observations conducted</i>
Under-graduate	316	85	23	7	3
Advanced	36	15	8	3	2
Total	352	100	31	10	5

Table 5.1: Setting of the First Evaluation

5.2.3 Findings from the Log

The log mainly provided information about how many users we had and how often they entered the system. Table 5.1 shows that we had 100 unique users; 85 undergraduate and 15 advanced students. We could also see how often they used the system, and these findings helped us verify the findings from the questionnaires.

From the tracker we could also see system usage for the last months, weeks, days and hours of the day. Table 5.2 below shows statistics over what weeks the system was most often accessed.









Last 20 Weeks		Unique Visitors
Week 42	206	
Week 43	270	
Week 44	211	
Week 45	91	
Week 46	70	
Week 47	82	
Week 48	45	
Week 49	13	

Table 5.2: eXTReMe tracker (Unique Visitors)

Week 42, 43 and 44 are the evaluation weeks. We can also see that it has been used somewhat after that as well, and that the usage decreased as the term ended. These statistics are from 12. December 2003.

5.2.4 Findings from the Questionnaires

This section is divided according to the three aspects presented in Table 4.2 and 4.5; system usage, usability and user satisfaction. All means presented in the tables are from scales going from 1 (most negative) to 9 (most positive). The tables also show *Min*, the lowest value answered and *Max*, the highest value answered. The standard deviation (SD) is a measure of dispersion in a distribution and is a way of indicating how much the values deviate from the mean. Appendix C contains all the data from the questionnaire, for both evaluations, and the questionnaire is given in appendix A.

System Usage

On average, respondents reported to have used the system about three times for about 5-10 minutes. We also calculated the mean number of registered logons in the evaluation period from the log. This is shown in Table 5.3. There was a difference between questionnaire and log for the undergraduate students. The log reported more usage than the answers from the questionnaire. The mean value from the log was 7,0 (median value was 5) and in the questionnaire the mean was between 3 and 4 times. The reason for this difference can be that many of the students had used the system a lot more than average. One of the students reported to have used the system between 4 and 6 times in the questionnaire, but was registered 33 times in the log. The maximum option in the questionnaire was “more than 9 times”.

	<i>Questionnaire</i>	<i>Log</i>
Undergraduate	Between 3 and 4 times	7,0
Advanced	Between 2 and 3 times	2,8
Total	About 3 times	4,9

Table 5.3: System Usage

There was a significant difference between undergraduate and advanced students in how much time the separate group spent on the system each time they entered. The undergraduate used it relatively longer than the advanced students. This difference was significant, $M_{\text{undergraduate}}=2,95$ (between 10 and 15 minutes) and $M_{\text{advanced}}=2,0$ (between 5 and 10 minutes), $t(25) = 2,26$, $p = 0.033$.

Usability

Most users preferred to use simple search when searching for content in the database.

- Simple search: 19 responses
- Advanced search: 3 responses

Search was one of the main functions in POSbase and therefore quite important. The questionnaire had several questions concerning this. The general reactions about search were satisfactory, and are presented in Table 5.4

	<i>Questions/statements</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
20	The search process in POSbase was: (Difficult- Easy)	1	9	6,0	2,23
21	Did you find what you were looking for? (Never – Always)	1	9	5,24	2,61
22	To understand the search result was: (Difficult – Easy)	1	9	5,67	2,60
24	To open the files in the search result was: (Difficult – Easy)	1	9	6.0	2,55

Table 5.4: User Reactions to Search

In the questionnaire some of the students commented on the search. Some comments concerned using the presentations for lectures, and two examples are shown below.

“The files should have been sorted by the lectures... “

“A bit hard to understand how to find information that corresponds with the lecture.”

Furthermore, most students found the information in the search-result adequate. This is shown in Figure 5.3.

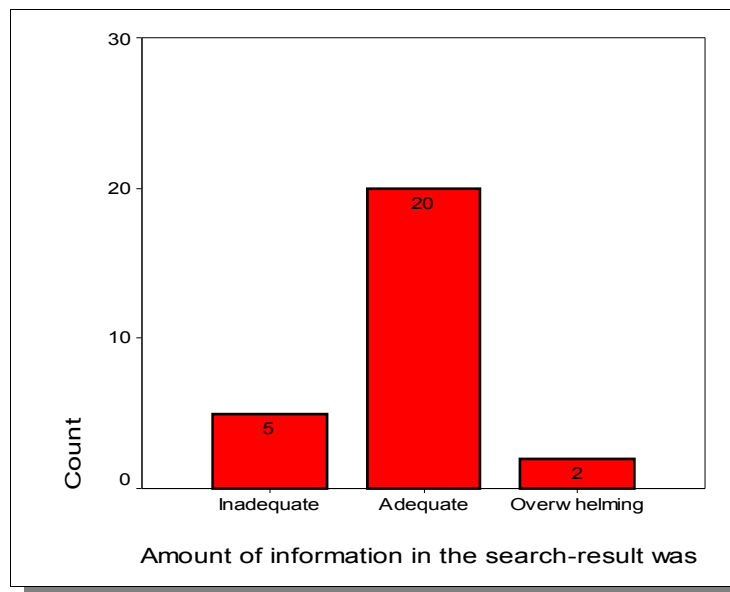


Figure 5.3: Information in the Search Result

An important aspect of usability that we wanted to investigate was navigation and orientation. This was also mentioned as one of the important features of hypermedia systems discussed in chapter 2, and is the area where research is most needed as disorientation often is mentioned as a problem in these systems. We had included several questions about this, as well as comment fields. Table 5.5 as well as the comment below show that some students had problems finding what they were looking for in POSbase.

	<i>Statements</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
8	Amount of information on screen: (Inadequate – Adequate)	3	9	5,73	1,73
9	Organisation of information on screen: (Confusing – Clear)	1	9	5,81	1,78
10	Going back to the previous screen: (Impossible - Easy)	1	9	5,38	2,43
11	Learning to navigate with POSbase: (Difficult - Easy)	1	9	4,89	2,42
12	Gaining overview over the possibilities offered: (Difficult - Easy)	1	9	4,23	2,34

Table 5.5: User Reactions to Navigation and Orientation

“Hard to find relevant presentations. Cumbersome that they don't come together, you have to go out of one presentation and then into another.”

There were two significant differences between undergraduate and advanced students that concerned navigation and orientation. These differences are also shown in Table 5.6. The first difference found was “Amount of information on screen”. This difference was significant, $t(24) = 2,12$, $p = 0,045$. The undergraduate found the information on screen more adequate than advanced students. The other significant difference found was for the question “Learning to navigate with POSbase”, $t(25) = 2,07$, $p = 0,049$. The advanced students found it easier to navigate with POSbase than the undergraduate.

	<i>Amount of information on screen</i>	<i>Learning to navigate with POSbase</i>
<i>Undergraduate</i>	6.1	4,5
<i>Advanced</i>	4.5	6,8

Table 5.6: Significant Differences between Student Groups

Not all students reported to have used the discussion forum. There were however some discussions going on, but there seemed to be some students who used it more frequently than others. Some of the discussions were started by the lecturer and others by the students. Examples of postings on the forum are given in appendix G. Those who used the forum found it rather easy to use. The mean use reported on the scale from never (1) to always (9) was 3,7 while ease of using the forum was 7,4 on the scale from difficult (1) to easy (9).

User Satisfaction

Generally the students were satisfied with the system. Some issues that were pointed out was that they appreciated having presentations available on the Web and that they found the presentations relevant for their lectures. These findings are shown in Table 5.7.

	<i>Questions</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
27	Did you find the content of POSbase relevant for the lectures: (Not at all – Very)	1	9	6,70	2,67
28	How useful was the content of POSbase to learn about cognitive psychology: (Not at all – Very)	1	9	6,08	2,27
29	Did you find it useful to have presentations of research experiments available on the Web: (Not at all – Very)	1	9	7,62	2,16
30	What do you think about combining traditional lectures with web-based education: (Very good - Very bad)	1	9	6,24	2,73

Table 5.7: User Reactions to the Use of POSbase

5.2.5 Findings from the Interviews

The interviews were particularly useful in understanding issues concerning usability and user satisfaction. We also asked some questions about system usage, but mainly concentrated on why questions. We hoped to discover new aspects, which the development team had been unaware of, as well as to elaborate on issues discovered from the questionnaire. The findings are presented according to how important they seemed to the subjects within the three aspects (Table 4.2), and we outline problems and possible solutions mentioned.

All the interviews were conducted in Norwegian. The extracts below are translated and notes in brackets are added by us. In the transcriptions the breaks are denoted by ... , «I» is the interviewer and the number is a reference to the subject. This is common for both evaluations. Examples of transcribed interviews can also be seen in appendix D.

System Usage

Most of the students used POSbase to get the lecture notes. Some preferred to prepare in advance, but most seemed to use it for repetition. Some said that this was due to the fact that they found it easier to search having been to the lecture and knowing which topics was covered. There were also some students who emphasised that they found it useful as a reference book where they could find definitions to important terms.

I: For what did you mainly use POSbase? Repetition? (this had been mentioned earlier in the interview)

2: Yes, actually. But I found it useful for both 101 and 103 also (two other psychology courses) as there are several terms that are fairly well defined, and you can also see the connection between different terms by clicking around. That was good. He has done it very understandable with illustrations and so.

Extract 5.1: subject 2 (undergraduate)

Students complained about the availability of computers. This was mentioned as setting constraints for the use of POSbase, and the reason why they missed ordinary lecture notes. Especially the students on the introductory course emphasised this, the advanced students claimed to have relatively stable internet access. This issue was not covered by the questionnaire.

I: What do you think of using POSbase in combination with lectures?

6: Well, that depends on what you mean by combination ... as I said I don't have internet at home, but if you do have internet at home, or spend a lot of time on the computer lab, then it is easy because then you can sit and go through them. But I'm never on the computer lab really. Just to print out the lecture notes and then leave. ...

I: Do you use Uphil (one of the buildings where the students have computer labs)

6: Yes, but there are quite few computers really.

I: Is it difficult to get one?

6: No, not very difficult, but I don't really feel like I can sit there for hours. Many people do that of course, but usually when I'm there, there are one or two computers free.

Extract 5.2: subject 6 (undergraduate)

Usability Issues

During the interviews we paid special attention to usability issues as one of our main purposes was to improve the system. This also led us to emphasise negative aspects and encourage the subjects to elaborate on problems they had experienced. Several aspects were brought up during the interviews. Features of interest are especially those that were mentioned by more than one subject.

One problem that many of the students seemed to share was printing the lectures. This was not captured in the questionnaire and was therefore new to us. From the above

extracts we can also see that not all of the students spent a lot of time with computers, and they therefore wanted quickly to print one lecture. This proved to be a problem, as the system is not organised by the lectures. One lecture consisted of several experiments and keywords. These are all in different PowerPoint files, which have to be printed separately.

I: Do you think you will continue to use POSbase?

1: ... what I'll probably do is to go in there and download it to my own computer and then do a printout. ... What I don't know is when you have a link like that (points at the screen where a PowerPoint presentation is open) where it says Bless et al. or it can be a term or something. If you click on that... is that in the same presentation? Or is it in another presentation?

I: No, they are all stored as different files.

1: So when you have downloaded a presentation and take a printout, you might not get the terms? So then, what order should things be in when we read it, cause it is important to us that things come in a natural and correct order when you read things. ... That can be a challenge, to make it come in a natural order as when you see it on the screen., where you can click back and forth.

Extract 5.3: subject 1 (advanced)

The students expressed that they found the search process quite easy, and also that they usually found what they were looking for. As we also discovered from the questionnaires, most of the students preferred to use simple search. Only two of the student replied that they preferred using the advanced search, while one preferred both, and one had not tried searching. Although all the students answered that they found the search result easy to understand, some of them had some comments on different issues they found more difficult. This was due to several factors and is more thoroughly discussed below.

One feature that many of the undergraduate students commented on was that they expected the content to be organised by the lectures. This was also commented on in the questionnaire. Usually lecture notes are distributed, either electronically or on paper on the lecture, as one file, containing the whole lecture from beginning to end. That POSbase was organised differently confused some of the students.

I: What do you think of using POSbase in combination with lectures?

8: It worked very well as a preparation on the net, because it was the same as in the lectures, and you got the presentations. But I missed being able to print out like we normally do, the lecture notes, to take notes on. But I can understand that this can be somewhat difficult as there are just PowerPoint presentations, and these can be quite many and long and then there are the animations and stuff like that. But I still missed the lecture notes. Maybe because I'm used to it. But I think it is good to be able to prepare on the net. Now I don't have internet at home anymore so I have to sit at school where we don't have very good computers. There is a lot of waiting ... so that's a bit difficult, but it's really no problem if you just get one.

Extract 5.4: Subject 8 (undergraduate)

Organising the content by the lectures was not mentioned by the advanced students, and can indicate different types of system usage. We also see from the quotation above that this feature is connected to the issue of availability as the students did not have the opportunity to spend time exploring the material, but wanted quick access to lecture notes.

The questionnaire uncovered some problems concerning navigation. Through the interviews we tried to elaborate on these issues. One tendency that we noticed was that students using the information page as a starting point for navigation found navigation easier than those who entered directly through “view file”. The information page contains hyperlinks to all the relevant presentations for one experiment. This is the page entered after selecting an experiment title from the result list (see Figure 5.2). Although some did not feel that this had anything to do with the navigation, some felt lost when they came directly to the PowerPoint presentation. This is also explained in extract 5.5.

I: Did you use the result page?

3: Yes. Actually I think I tried both. To try it out. I tried to go in there, on «file». I found that much easier, because if I go in there on «view file» I just went round and round and it was difficult to figure out where I had been and where to go. But if you go in there (points to the result page) and take each file I felt it was much easier to get an overview and easier to find out which pages to enter and which I didn't need.

I: You understood what each of them meant?

3: Yes, I think so. All that comes up under the keywords and presentations, is

relevant for that topic on the lecture, whereas when you go to «view file» you have to click on each of those links. On the computer I had to choose whether to open or save each presentation, so then you have to do that over and over again ... clicking. So yes, I thought the other one was easier.

Extract 5.5: subject 3 (undergraduate)

Closely related to organisation and navigation are also the time and ease it takes to learn the system. As can be seen so far from the interviews, some of the students experienced some problems with the use of POSbase, and they expressed that they found it a bit hard to get started. This was because they expected the content to be organised by the lectures and because they did not know what to search for.

Usability issues concerning the discussion forum were mainly positive. This was also revealed in the questionnaires. However, there was one feature that was commented on by one of the interview subjects. This was that the discussion forum was not part of the overall structure of the system, and when navigating inside the forum, one lost the top menu. The same student also commented on one defect we were not aware of. She had noticed that one of the hyperlinks for navigation inside the forum did not work. It provided an error message when activated.

User satisfaction

Another aspect that we are interested in is the user reactions to the system, summarised in Table 5.8. To what degree were they satisfied or dissatisfied using this kind of teaching. This table is based on two questions from the interview guide (see appendix B, question 10a, 10b) concerning what they were most and least satisfied with.

The students generally seemed to be very pleased with the content of POSbase and especially with the opportunity to find definitions of important terms was emphasised. The students also liked the structure and layout of the learning material. There was only one student who was not positive about the content. This was an advanced student, who would have liked it to be more thorough. The main feature they were dissatisfied with were getting an overview of the content (lectures). The other issues have been discussed throughout this section.

Subject	Most satisfied with	Least satisfied with
1	Easy and intuitive to use.	Not very useful for the students, doesn't make their days any easier.
2	Content: Experiments and terms.	Difficult to get overview of content.
3	Content.	Difficult to get overview of content.
4	That experiment is made available; as reference book.	Difficult to find specific lectures.
5	The discussion forum	Navigation within discussion forum.
6	The content; amount of information not overwhelming.	Difficult to find specific lectures.
7	The discussion forum.	Don't know.
8	The content/information.	Difficult to use at first, didn't know what to search for/what the content were.
9	Being able to look up «key terms».	Printing
10	The discussion forum.	Boring layout.

Table 5.8: User Satisfaction

5.2.6 Findings from the Observations

The subjects were given two tasks, finding two experiments and two keywords. They were encouraged to think aloud while interacting with the system. From the observations we learned that none of the students had any problems with finding the experiments. Two of them used advanced search and three used simple search. A new problem we found was that the students did not know how to find specific keywords. Neither the questionnaires nor the interviews revealed any problems with keywords. However, when solving searching tasks, we observed that users had difficulties in finding specific keywords.

I: And the keywords, how would you find them?

9: Yes, actually I tried that earlier once, and then I got a lot of results. So maybe you should do it here (points to search, writes «cognition»). (He looks at the list, but can not see «cognition», we have to explain to him how he can find that specific keyword.)

Example 5.1: subject 9 (advanced student)

In the interviews we learned that the students appreciated the opportunity to find important definitions, but none of the subjects mentioned any problems with finding them.

5.2.7 Summary of First Evaluation

The students were positive to having experiments available on the Web. They also saw the advantage of combining this kind of environment with traditional teaching. Those who used the discussion forum were pleased with the opportunity to exchange ideas with fellow students and their lecturer and found it easy to use. From the interviews we learned that the information page seemed to help navigation. The students also found it rather easy to search, but experienced problems when navigating within the PowerPoint presentations.

In our evaluation we have emphasised findings that will help us improve POSbase. The problems are mainly concerning navigation and orientation within the PowerPoint presentations. The list below shows a summary of the revealed problems and some possible solutions. The evaluation methods used are given in brackets.

Possible improvements/problems found from the first evaluation:

- Navigation/Orientation
 - Overview of the possibilities that the system offered (questionnaire)
 - Content overview (interview/questionnaire)
 - Learning how to navigate was difficult (questionnaire)
 - Provide some kind of overview/indexing (interview)
- Amount and organisation of information on screen should be improved (questionnaire)
- Printing
 - Better support of printing out the files for the lectures (interview)
- Include the discussion forum in POSbase menu. Fix problem. (interview)
- Make it possible to search directly for keywords. (observation)

Problems that we were not able to implement are discussed further both in section 5.4 and chapter 6.

5.3 Second Evaluation

Following the findings from the first evaluation, we made improvements on the first prototype. We present the new features that were implemented and then the findings from the second evaluation.

5.3.1 Prototype Version 2

We gave priority to the improvements needed according to the degree of importance and resources. However, one of the main problems revealed, navigation within PowerPoint, proved somewhat difficult to change. This will be further discussed in section 5.4.

The main changes in the second prototype are summarised as follows:

- Improved search result and improved navigation within the HTML-pages.
- Included direct search for keywords in simple/advanced search.
- Added a printout file
- Reduced amount of information per page and separated the information into several pages. Layout was improved for Home and Help.
- Included the discussion forum in the main menu.
- Added explanations of the search criteria in simple and advanced search.
- Improved log in

From the first evaluation one feedback was too much information on the screen, especially Home and Help. Version 2 therefore contains less information on each screen and the information is split into several pages.

The observations revealed that it seemed difficult to search for keywords. The reason is that the users had to open a presentation to be able to find a keyword. We therefore implemented an option for choosing category when searching. This feature is shown in

simple search in Figure 5.4, and the search result list is shown in Figure 5.2. «All Categories» means both Experiments and Keywords. To compare with the first prototype, see Figure 5.1.

The screenshot shows the POSbase search interface. At the top left is the POSbase logo. Below it are navigation links: Home, Search, Advanced Search, Help, Feedback, and Forum. On the right is a Log out link. The main search area contains a 'Category:' dropdown menu set to 'All Categories', a 'Free text:' input field, and 'Search' and 'Reset' buttons. At the bottom, it says 'Last updated: January 21, 2004, by: Birgitte Gudem & Anne M Stokke-Olsen'.

Figure 5.4: Simple Search with Categories.

The screenshot shows the search results page. At the top left is the POSbase logo. Below it are navigation links: Home, Search, Advanced Search, Help, Feedback, and Forum. On the right is a Log out link. The main content area shows 'The search returned 21 results' followed by a table of 10 results. Each result has a number, a category (all 'experiment'), a title, and a 'View File' link. At the bottom of the table is a pagination link '1 2 3 Next Page >>'. At the bottom of the page, it says 'Last updated: January 21, 2004, by: Birgitte Gudem & Anne M Stokke-Olsen'.

Number	Category	Title	Action
1	experiment	Availability: Ease of amount of recall?	View File
2	experiment	Cannon's Criticism of the James-Lange Theory of Emotion	View File
3	experiment	Context-dependent memory (Godden & Baddelev, 1975)	View File
4	experiment	Context-dependent memory (Smith et al., 1978)	View File
5	experiment	Does short-term memory exist? (Postman & Phillips, 1965)	View File
6	experiment	Explicit and Implicit Memory: Retention Interval (Tulving et al., 1982)	View File
7	experiment	James-Lange Theory of Emotion	View File
8	experiment	Mood and cognitive processing styles	View File
9	experiment	Mood and cognitive processing styles (Bohner et al., 1992)	View File
10	experiment	Mood as information	View File

Figure 5.5: Presentation of the Search Result

As the system grew, there was a need for splitting up the search result on different pages. We chose to have 10 hits on each page, so that it would be easier for the user to gain an overview of the of result set. An example of a result set is shown in Figure 5.5. This way of displaying the search result also makes it easier to switch between the

result pages.

When clicking one of the hyperlinks in Figure 5.5, a page like the one presented in Figure 5.6 would appear. The PowerPoint presentations opened in new windows. This was notified by a title appearing when the cursor was on a hyperlink (rollover).

The screenshot shows a web page with the following content:

- Header:** POSbase logo, navigation links (Home, Search, Advanced Search, Help, Feedback, Forum), and a Log out link.
- Title:** Does short-term memory exist? (Postman & Phillips, 1965)
- Experiment:**
 - Title: Does short-term memory exist? (Postman & Phillips, 1965)
 - Content: Cognition Memory Free Recall Long-Term Memory Primacy Effect Recency Effect Short-Term Memory
 - Source: Quarterly Journal of Experimental Psychology, 17, 132-138
 - Year: 1965
 - Link: [Power Point Presentation](#)
- Reference:**
 - Title: Short-term temporal changes in free recall
 - Author: Postman & Phillips
 - Link: [Power Point Presentation](#)
- Keywords (definitions):**
 - Long-term memory [Power Point Presentation](#)
 - Memory [Power Point Presentation](#)
- Field:** Psychology, Experimental
- Contributor:** Rolf Reber, [Power Point Presentation](#)
- Print out file including experiment, keywords and reference:** [Power Point Presentation](#)

Figure 5.6: Information Connected to a Presentation

5.3.2 Setting of the Second Evaluation

We had only four volunteers from the advanced students to interview and none from the undergraduates. The material that is the basis for this evaluation is shown in Table 5.9.

<i>Course</i>	<i>Number of students</i>	<i>Number of users</i>	<i>Questionnaires analysed</i>	<i>Interviews conducted</i>	<i>Observations conducted</i>
<i>Under-graduate</i>	881	91	23	0	0
<i>Advanced</i>	36	12	8	4	4
<i>Total</i>	836	103	31	4	4

Table 5.9: Setting of the Second Evaluation

5.3.3 Findings from the Log

From the log we could see that we had 103 unique users in our second evaluation. 91 of these were undergraduate students and 12 were advanced students. From the tracker we could see how much the system was used. Table 5.10 shows the number of unique users in the different weeks.

Last 20 Weeks		Unique Visitors
Week 01	3	
Week 02	40	
Week 03	16	
Week 04	94	
Week 05	171	
Week 06	126	
Week 07	98	
Week 08	52	
Week 09	40	
Week 10	21	
Week 11	98	
Week 12	82	
Week 13	77	
Week 14	33	
Week 15	9	

Table 5.10: eXTReMe tracker (Unique Visitors)

POSbase was introduced to the undergraduate students during week 5 and lasted until week 9. The advanced course lasted from the end of week 11 to the beginning of week

14. As we see from the tracker, there were also some users outside these periods indicating that some students from the last term as well as undergraduates were still using it. This was confirmed as we recognised some of the usernames in the log.

5.3.4 Findings from the Questionnaires

System Usage

On average the students reported to have used the system between 2 and 3 times. From the log we estimated the mean number of registered logons in the evaluation period. Table 5.11 summarises these findings.

	<i>Questionnaire</i>	<i>Log</i>
Undergraduate	Between 2 and 3 times	2.7
Advanced	Between 3 and 4 times	3.9
Total	Between 2 and 3 times	3.3

Table 5.11: System Usage

Table 5.11 shows the agreement between the numbers from the log and those from the questionnaire, which contributes to verify the questionnaire. (The numbers from the log are probably a bit low as they do not include users who only created a user account and then never logged on, although in the questionnaire they might have reported to have used the system one time.) The difference in usage between undergraduate and advanced registered from the questionnaire is significant, $t(29) = 2,43$, $p=0,021$.

Another important difference in system usage was the use of the forum. During the undergraduate course this was not used at all, and there were no postings. In the advanced course, however, it was more used. Examples of postings from the forum are given in appendix G.

Usability

16 (51%) respondents reported to prefer simple search, while 9 (29%) reported to prefer advanced search. Reactions to searching and the search result in POSbase are

presented in Table 5.12 and in Figure 5.7.

	<i>Questions/statements</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
20	The search process in POSbase was: (Difficult – Easy)	1	9	5,88	2,44
21	Did you find what you were looking for: (Never – Always)	1	8	5,33	2,18
24	To understand the search result was: (Difficult – Easy)	3	9	6,32	1,93
25	To open the files in the search result was: (Difficult – Easy)	1	9	6,33	2,54

Table 5.12: User Reactions to Search

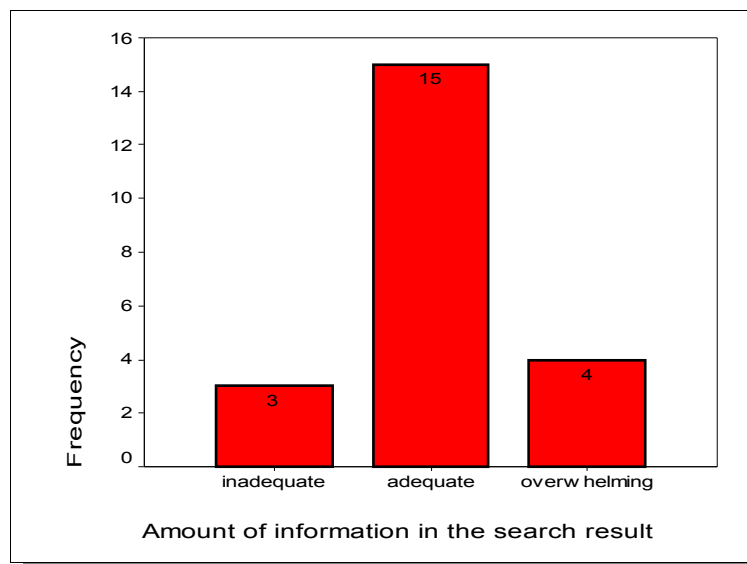


Figure 5.7: Information in the Search Result

Figure 5.7 shows that most of the students found the information in the search result adequate (the numbers on the bars indicate the number of responses). The numbers in Table 5.12 indicate that the search process was satisfactory, although not entirely positive. This indicates that further improvements could be needed. There were also great variations in the responses; ranging from 1 (most negative) to 9 (most positive). One problem that was mentioned in the comment field for search was that they missed a way of getting an overview of the content before searching. This can help explaining why some students did not find searching very easy.

“The search function was useful, but it was the only way. What about a map over what it contains? I had to search in “all categories” and use the criteria “t” or “e” to find out that there were approximately 100 articles or presentations.”

“More overview. I would like to have the opportunity to see which presentations one can choose from within a wide topic.”

The problem with content overview is closely related to navigation and orientation, and was also revealed in the first evaluation. Question 8-12 in the questionnaire covers these aspects, and the result is presented in Table 5.13. The students reported difficulties with gaining overview and learning how to navigate in POSbase.

	<i>Statements</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
8	Amount of information on screen was: (Inadequate – Adequate)	1	9	5,70	2,04
9	Organisation of information on screen was: (Confusing – Clear)	1	9	5,07	2,17
10	Going back to the previous screen was: (Impossible - Easy)	1	9	6,81	2,32
11	Learning to navigate with POSbase was: (Difficult - Easy)	1	9	4,61	2,47
12	Gaining overview over the possibilities offered was: (Difficult - Easy)	1	9	4,03	1,94

Table 5.13: User Reactions to Navigation and Orientation

As already mentioned only the advanced students used the discussion forum during the second evaluation, and they found it quite easy to use. The question “Using the discussion forum was: (Difficult – Easy)” had a mean of 7,33 for the advanced students. They also reported to have found it useful (6,29 on “Was the discussion forum useful: (not at all – very)”). Examples of the postings are given in appendix G.

User Satisfaction

Some of the user reactions found in the questionnaires are summarised in Table 5.14.

The students were generally positive to the idea of having presentations of research experiments available on the Web, and to the content of POSbase. The numbers in Table 5.14 show that they like combining web-based learning with traditional lectures, although this view varies greatly among the students.

	Question/statement	min	max	mean	SD
27	Did you find the content of POSbase relevant for the lectures: (Not at all – Very)?	1	9	6,59	1,91
28	How useful was the content of POSbase for learning about cognitive psychology: (Not at all – Very)?	3	9	6,52	1,48
29	Did you find it useful to have presentations of research experiments available on Internet: (Not at all – Very)?	5	9	7,96	1,22
30	What do you think of combining traditional lectures with web-based education: (Very good – Very bad)?	1	9	6,40	2,40

Table 5.14: User Reactions to the Use of POSbase

One issue that was commented on by some students was that they felt there were too many different systems available for the courses, and that it therefore was difficult to orientate:

«General comment: But why another web-page? Last term we had 4 different places where we could get information about the course and still I could not find out when my exam was.»

«I'm sure it's ok, but we already have “studentportalen”, mail and “Watson”, so it is a bit much with this system as well...»

These comments can indicate that the purpose of POSbase was not sufficiently communicated to the students. The user satisfaction issues are more thoroughly explored in section 5.4 where we compare the results from the two evaluations.

5.3.5 Findings from the Interviews

System Usage

The students reported to have used the system for about 4-5 hours and about 5 times. This is a bit higher than the numbers from the questionnaire, indicating that the volunteers we had for the interviews had used POSbase more than average. The students mainly used POSbase to get lecture notes and to look at or use the discussion forum. Some said that they mostly used the system after the lectures because they found it easier to search having been to the lecture and knowing which subjects were covered.

I: For what did you mainly use POSbase?

14: I mainly used it to check out the PowerPoint presentations that Reber had shown during the lectures and discussing in the forum.

Extract 5.6: subject 14 (advanced)

Usability Issues

The students expressed that they found the search process quite easy. Three of the students preferred to use simple search while the last student used both searches. There were some problems in finding what they were looking for because they expected a different structure of the content. They had problems in finding relevant information by searching for specific topics. These topics were the ones given for the lectures on the course schedule, but when searching in POSbase, these topic gave «no hits» because they were not registered as keywords in the database.

I: Did you find the search result easy to understand?

13: I would prefer to have one of this hierarchical tree structure or something that said “Rolf Rebers lectures”, and then showed everything he had used during the lectures. That would have been useful.

Extract 5.7: subject 13 (advanced)

A common problem mentioned was the organisation of the content in POSbase. It seemed that the students focused on the lecture notes when they tried to find information in the system. The extract 5.8 shows how subject 11 expressed that she had some problems in finding out how the content of the database was structured.

I: What did you think about the design or layout?

11: The first time I entered, I hoped that he (the lecturer) had published his lectures there and he did... but they did not lie in order. It took some time before I understood how it worked in relation with the lectures, but it does work... you find what he has presented in the lectures, but it took some time before I understood how he had organised it.

Extract 5.8: subject 11 (advanced)

Subject 12 also expressed that the organisation of the content was not clear, and that there should have been a structure organised into either blocks or topics.

I: What in POSbase were you the least satisfied with?

12: It should have been divided into blocks or topics..

Extract 5.9: subject 12 (advanced)

The students found it rather easy to start using POSbase, the only problem mentioned was how the lecture notes were organised, as shown in extract 5.8 and 5.9.

I: How was it to get started with POSbase?

11: That was easy, self-explaining really.

Extract 5.10: subject 11 (advanced)

Three of the students reported to have used the discussion forum and said that they found it rather easy to use. These findings are also supported by the questionnaire as it showed that only advanced students had used the forum.

User Satisfaction

The students seemed pleased with POSbase in general, as they appreciated to have the opportunity to get the lecture notes that had been used in the lectures. On the other hand they thought that it was somewhat cumbersome that the lecture notes was not ready to just print out and that they had to search for each one of them.

I: What do think of using POSbase in combination with lectures?

11: Ok. It was very easy to find... when you attend to both (lectures and POS-base) then you find it quite easy.

Extract 5.11: Subject 11 (advanced)

There were different opinions about the content of the PowerPoint presentations. Most of them expressed that they were satisfied with the presentations and that they found them easy to read, see extract 5.11 and 5.12. Subject 14 also expressed that he found the presentations somewhat inadequate, see extract 5.14.

I: Was POSbase useful for you studies?

14: Yes, I quickly got an overview of the different experiments and things like that.

Extract 5.12: Subject 14 (advanced)

I: What did you think about the study contents that were presented in the PowerPoint presentations?

11: PowerPoint provides a good overview. It is very quick to scroll down the page with your eyes until you find what you want.

Extract 5.13: Subject 11 (advanced)

I: What did you think about the study contents that were presented in the PowerPoint presentations?

14: It was a bit... it was very short. It was almost a bit inadequate, but it is enough.

Extract 5.14: Subject 14 (advanced)

Table 5.15 below summarises the answers given by the students to the questions of what they were the most and the least satisfied with.

Subject	Most satisfied with	Least satisfied with
11	That you can find out what is important for the course without attending the lectures.	Either I tried to use it for something that it is not intended to, or there is very little information in the DB, because it often got “no hits”.
12	To have a place where you could get the lecture notes.	It should have been more divided into blocks or topics.
13	That there is PowerPoint presentations of things that are relevant for the course.	It is hard to know what was relevant.
14	The most interesting for me was the possibility to discuss (discussion forum).	It was irritating that when downloading a PowerPoint presentation, every time I had to choose if I wanted to open or save the file.

Table 5.15: User Satisfaction

5.3.6 Findings from the Observations

In the observations we used the same tasks as in the first evaluation: finding two experiments and two keywords. The students were encouraged to think aloud when carrying out the tasks. The extracts are translated and the comments in brackets are added by us.

All the students managed quite easily to complete the tasks. However there were still some problems or confusion about some issues. When presented with the task of finding the experiments, all students chose simple search. All but one chose “experiment” as category, while one chose “all categories”. There was some confusion as to whether it was possible to write more than one word in the text area.

11: I think “response scales” is a good search word (when searching for interpreting response scales), but then I don't know if it manages more than one word in the search, I've only tried with single words before. Yes, it did (gets the anticipated search result). That was an experiment, so now I know that it manages several words, so then I try “mood and information” (when searching for “mood as information). No, now I got nothing. Then I just try with just “mood” or just “information”.

Extract 5.14: Subject 11 (advanced)

None of the other students tried to type in several search criteria, they either used the whole title, or just parts of it. One student (subject 13) found it a bit difficult to keep track of all the hyperlinks within a presentation as you lost the one you were originally in. But when we explained that he could right click and choose to open in a new window that seemed to solve his problem. This problem with navigation was also uncovered through several of the interviews.

When trying to find the given keywords all but one chose “keyword” as category in simple search. Some of the students seemed, however, to get a bit confused when presented with a result list that contained more than just the search criteria. One of the keywords the students were asked to find was “memory” which yields quite many results (24 hits). One of the students (subject 12) pointed at the whole search result list and said “this is everything that has to do with memory”. Another student (subject 13)

pointed at “cognition” which was part of the search result and asked us if this keyword concerned both “cognition” and “memory”.

It could also seem that the “include keyword in search result” in advanced search was not clear enough. One student (subject 14) who tried to use advanced search for finding the keywords did not notice this, and therefore only searched for experiments. He tried advanced search because he got too many results in simple search, where he had chosen “all categories” when searching for keywords.

5.3.7 Summary of Second Evaluation

The findings concerning user reactions were quite similar to those from the first evaluation. Students were positive to having presentations of research experiments available on the Web, and they found the search process and the search result quite easy. The discussion forum was only used by the advanced students who found it very easy to use.

The second evaluation revealed that more improvements were needed for POSbase. These improvements mainly concerned navigation and orientation, which also were reported in the first evaluation. The observations revealed some difficulties we were not aware of from the interviews nor the questionnaire. The list below summarises the problems found and some possible solutions.

Possible improvements/problems found from the second evaluation:

- Navigation/Orientation
 - Make an index or category list of database content, sort of browsing (questionnaire and interview)
 - Improve navigation within PowerPoint presentations. (observation and interview)
- Search
 - Make it clear how many words can be used in the text area in simple search. (observation)

- Make it clear that the search function does not support AND or OR, or extend the search to include this functionality and explain how to use it. (observation)
- Make it more clear how to search for keywords in advanced search. (observation)
- The students seemed not to have a clear notion about the difference between keywords and experiments. Maybe the database structure should be changed to not include relations between keywords. This would reduce the result list when searching for keywords. (observation)

5.4 Comparing the Evaluations

In this section we compare the results from the two evaluations. Findings from the log and tracker are not presented here, as this has already been presented in the previous sections.

5.4.1 Questionnaires

When comparing the questionnaires from the two evaluations we combined the data files from each evaluation. We also made summaries based on the three aspects in Table 4.2, which shows how the questions in the questionnaire corresponded to the different aspects. This gave us a total mean for usability and user satisfaction.

Reliability

To check the consistence of the measurements, we did reliability analysis for the scales in the questionnaire (se appendix A) from both evaluations. We decided to look at the reliability for usability, user satisfaction, the combination of these and for the overall aspects. The reliability was based on a sub-sample of the questionnaires, where subject could only miss three questions within each aspect. This gave a total of 48 questionnaires. The reliability analysis is furthermore based on a subset of the questions presented in Table 4.5. Questions that were left out had too few respondents or were not scales. The alphas, along with the questions, are shown in Table 5.16 below.

<i>Aspect</i>	<i>Questions</i>	<i>Alpha</i>
<i>Usability</i>	8-12, 20-22, 24	0,79
<i>User Satisfaction</i>	7A-D, 27-31	0,84
<i>Usability & User satisfaction</i>	7A-D, 8-12, 20-22, 24, 27-31	0,91
<i>All aspects</i>	4, 7A-D, 8-12, 20-22, 24, 27-31	0,90

Table 5.16: Reliability of Questionnaire

The internal consistency of the scales was excellent, and allows individual assessment of usability and user satisfaction.

Means

Table 5.17 shows the total means for all scale questions concerning usability and user satisfaction from the two evaluations. The questions used are the same as in Table 5.16. The scales are from 1 (most negative) to 9 (most positive).

	<i>Frequency of use</i>	<i>Usability</i>	<i>User satisfaction</i>
<i>Autumn (2003)</i>	3 times	5,60	5,90
<i>Spring (2004)</i>	Between 2 and 3 times	5,58	5,96

Table 5.17: Comparing the two Evaluations

We see from these figures that there hardly was any difference at all between the two evaluations. This implies that the overall reactions to usability and user satisfaction did not improve after the changes had been implemented. To further investigate this we also looked at the specific changes we had made and more specific questions to see if there were any significant differences.

From both evaluations the problem with navigation and orientation seemed particularly profound. We tried to find alternative solutions to this problem after the first evaluation, by embedding PowerPoint presentations in our own pages (the ilayer-tag). This was abandoned by the development team because it did not improve the navigation and worsened the layout. Users could still not see what presentations had

been entered and in what order. We were therefore not able to improve the navigation within the PowerPoint files. We tried, however, to improve the navigation within the HTML-pages by adding titles/labels to the hyperlinks in the search result and opening the PowerPoint presentations in new windows from the search result. Now the users would always have the result list available.

Providing an overview of the content proved time-consuming after the first evaluation. We also concentrated on and spent most of the time trying to improve the navigation in PowerPoint. As POSbase is a general system, arranging the content by lectures was not feasible.

When comparing all the answers from the two evaluations, the only significant difference found concerning usability was on the question “Getting back to the previous page was; difficult (1) – easy (9)”: $M_{eval1} = 5,04$ and $M_{eval2} = 7,05$; $t(43) = 2,89$, $p = 0,006$. This might indicate that some of the changes we did helped to improve navigation within the html-pages, as the search result was not lost when entering the PowerPoint presentations. However, there were no other significant differences about usability to support this assumption. Other significant differences were on how much they had used the discussion forum and on the question “Do you think you will continue to use POSbase: not at all (1) – very much (9)”: $M_{eval1} = 5,25$ and $M_{eval2} = 6,41$; $t(44) = 2,0$, $p = 0,05$. This last example relates to user satisfaction, and shows that the students in the second evaluation were more positive to use POSbase in their further studies.

Usability of the discussion forum can not be compared because there were too few users in the second evaluation. This is probably due to the fact that the advanced students were encouraged by mail and in the lectures to use it, and their lecturer had also posted some problems for them. This was not done with undergraduate students.

We also checked if there were any relations between how often the system had been used and usability and between usability and satisfaction. The correlation between how

often the students used the system and satisfaction was $r = 0,304$, $p = 0,036$. The correlation between usability and satisfaction was highly significant: $r = 0,795$, $p = 0,000$. This implies that usability is very important for user satisfaction.

As presented in Table 5.17 the user satisfaction was almost the same for the two evaluations.

There were two more questions in the questionnaire concerning this issue, and are assessed from the sub-sample described above. These were multiple choice questions, where the respondent could choose one or more alternatives. In the first question (question 32), the students were asked *what they thought about the content of POSbase*. The response to this question is shown in Figure 5.8, where the figures represent the sum of answers. In the last alternative «Other», the respondent could write in other suggestions. Two of the answers here were «over-complex» and «easy to access». «Informative», «interesting» and «easy to understand» get high scores in both evaluations.

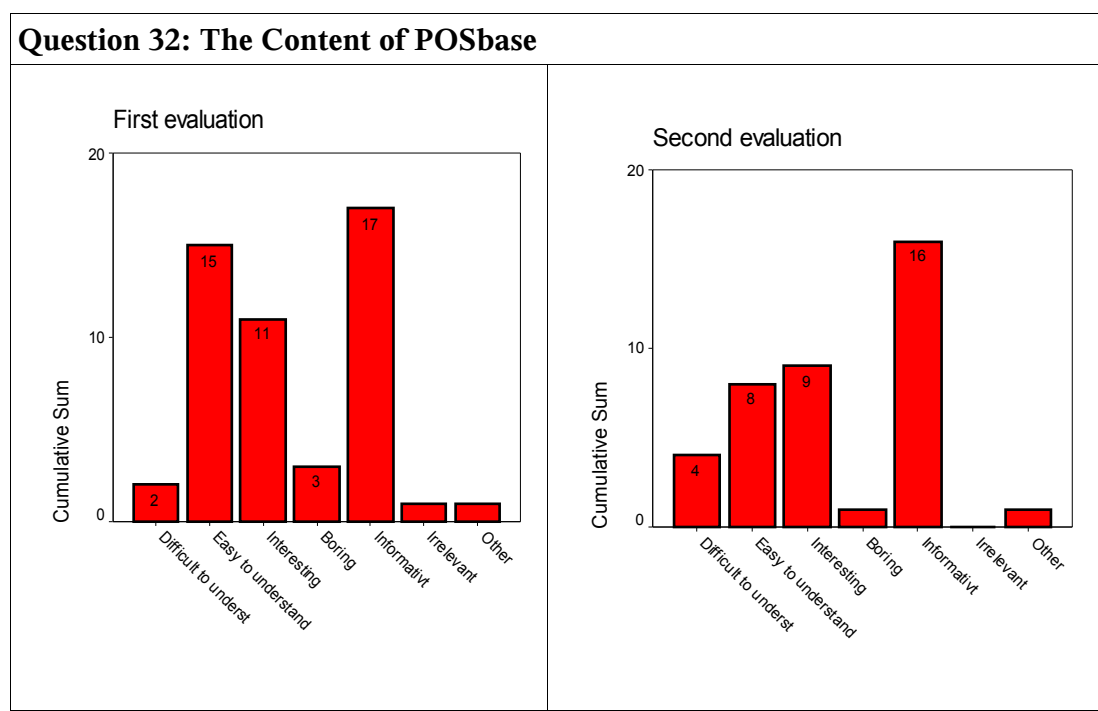


Figure 5.8: User Reactions about Content

The last question (question 33) in the questionnaire regarded what the presentations were best suited for. The response to this question is shown in Figure 5.9. In the last alternative, «Other», we got suggestions like «to find very specific experiments» and «to get short and precise information about a phenomenon or expressions etc.». The scores here are nearly identical between the two evaluations.

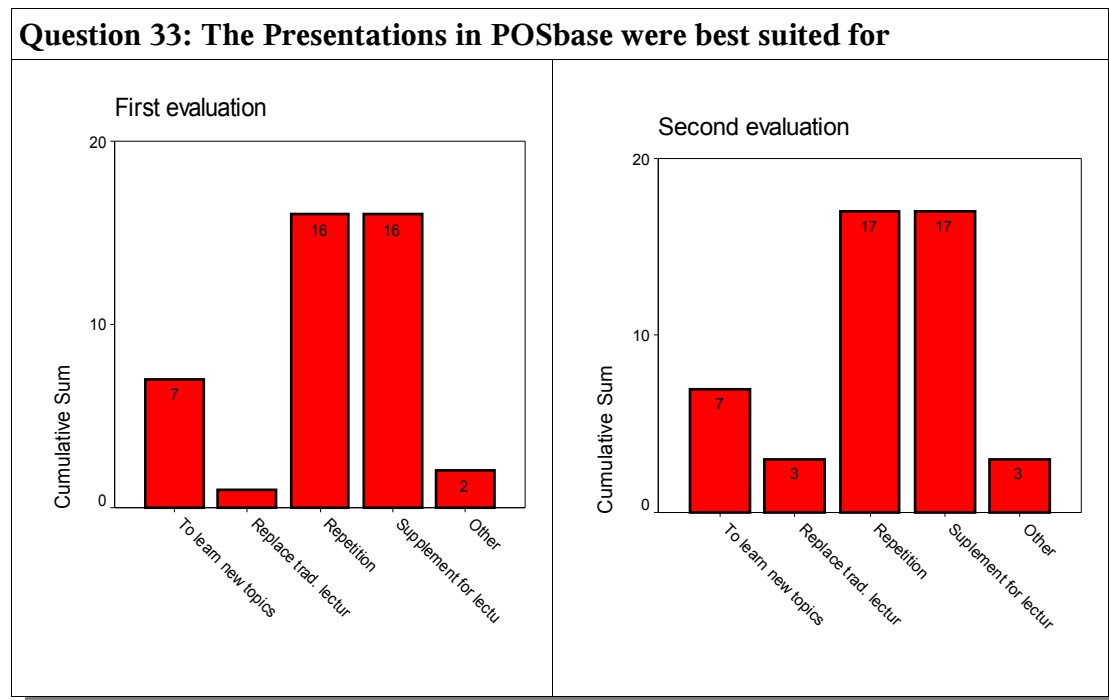


Figure 5.9: User Reactions to the Presentations

5.4.2 Interviews

There are two issues that make interview comparison difficult. One is that the two evaluations had different number of subjects. The other is that all the subjects in the second evaluation were advanced students. Despite of the different number and different types of subjects, the findings from each of the evaluations showed some similarities and differences.

Some difficulties that were reported in both evaluations were getting an overview over the content in POSbase. Several students expressed that it was difficult to know what could be found in the database, and that they therefore did not know what to search for.

This could be solved either by arranging the content by lectures (as many of the students wished for) or by categories/topics within science. The reason why we did not arrange the content by lectures is that this differed from advanced to undergraduate courses and that POSbase is not only intended to be used by the different courses, but also by other people interested. We could have made another kind of overview available, but this turned out to be too time consuming. We recommend though that this should be done in future work with POSbase.

From the first evaluation there seemed to be a general feeling of getting lost in the PowerPoint-presentations. This was not expressed so much in the second evaluation. The reason for this can be the difference in respondents. This was not mentioned by the advanced students in the first evaluation, but by undergraduate students.

Generally the students found the search process quite easy. What was difficult was to know what to search for. It was also reported that they would have preferred an alternative to search. Most students reported that they preferred simple search when searching for content.

Printing out the lecture notes was mentioned as a problem many times during the first evaluation, but not mentioned at all in the second evaluation. After the first evaluation we made printout files to make it easier for the students to print out, this can be the reason for why it was not mentioned.

5.4.3 Observations

The first evaluation showed that students had problems finding a specific keyword. After the evaluation we therefore changed both simple and advanced search to include keywords in the search result. In the second evaluation the students seemed to have no problems finding out how to use “categories” to search for keywords. After solving this problem, we had the opportunity to see other difficulties that become clear to us during the observations in the second evaluation. These were probably not discovered in the first evaluation because the students did not have the opportunity to search

directly for keywords.

5.5 Chapter Summary

The data material from the different methods have been carefully analysed, and we therefore feel confident in the results presented. The questionnaires provided us with general information about user opinions concerning the different features of POSbase, as well as overall satisfaction. The comment fields in the questionnaire also proved very useful as a way of getting feedback, as the students elaborated on the different questions in the questionnaire.

As we chose a combination of different methods in our approach, we also had the opportunity to get deeper insight into the problems discovered from the questionnaires. However both the interviews and the observations proved very useful on their own account, and provided us with information we would not have been aware of otherwise.

The main issues revealed through the evaluations of POSbase are that the students attending psychology courses were positive towards having a knowledge base with psychological experiments available for use in their education, but that the prototype presented still has some limitations before it can give the students the most possible benefit.

During the analysis we also found some possible ambivalence in the questionnaire, which is further discussed in the next chapter, along with other possible sources of error.

6. Discussion

This chapter outlines a discussion based on the findings from the two evaluations presented in chapter 5. In section 6.1 we discuss these findings and new design challenges regarding the research question. In section 6.2 we present a discussion on possible solutions and their effects. Section 6.3 presents our reflections on the development process and methodology, regarding strengths and weaknesses.

6.1 Findings and New Design Challenges

Here we elaborate on the design challenges that we found from our evaluations of POSbase. The findings in chapter 5 were presented according to three main aspects; system usage, system usability and user satisfaction. The system usage is the foundation for the evaluation as this represents how much the students used the system. Based on this we elaborated on the user reactions, usability issues and the user satisfaction with POSbase as well as the introduction of this system in their learning environment.

In general the students were quite positive to the POSbase project. They found it useful having presentations of research experiments and important terms available on the Web, and they also found the content relevant for their studies. Those who used the discussion forum also were quite satisfied with this feature and found it easy to use. Some of the discussions from the forum show that the student used their knowledge about psychology to discuss other issues. This especially concerns the debate about how people sleep (see appendix G), and suggests that the forum encouraged transfer of knowledge to other situations.

However, there are two main issues that need deeper considerations; navigation and content overview. From the first evaluation several students reported that they wanted the presentations arranged by the lectures in the course they attended. As POSbase is a general system with many different users we chose not to implement these requests. Another related problem was that students found it difficult to print out the lecture-notes, which consisted of several experiments and their keywords. In the database these

were several files that had to be printed separately. To meet the users requests, we provided print-out files that contained an experiment and its connected keywords and references. In this way the students only needed to print out a few files for each lecture. We did not get any feedback about the printing problem during the second evaluation. The reason for this can either be that the system improved or that the new students had not used it as much as those from the first evaluation.

Several students reported that they found navigation difficult. They especially found navigation within the PowerPoint presentations difficult. PowerPoint does not support features like navigation bars across different presentations/files. This was a problem in POSbase as each presentation had several hyperlinks within them. The users felt lost, as they could not see where they had started and where they had been. Some of the students reported that the information pages, given for each experiment, helped them when exploring the database content. In this way they could visit each presentation that was relevant for one experiment before continuing to the next experiment.

Some students found it hard to find relevant information in POSbase and suggested indexing or browsing as alternatives to searching. They also reported that it was easier to use POSbase after they had attended a lecture as they then knew which topics to search for. This is probably the reason why many reported that they found the presentations in POSbase best suited for repetition of the lecture. A related problem mentioned was that some of the students found it hard to get started using POSbase, because they did not know what to look for, nor what could be found. As POSbase is meant to have a broad range of users and not always in combination with lectures, it is important that users easily can find what they are looking for with a minimum effort. It is also important that they can quickly determine if the information is not present in POSbase. To solve this it is necessary to provide some kind of overview of the database content.

In section 2.1.3 we discussed hypermedia and navigation guidelines. Here it was mentioned that too many navigation methods can be bewildering. We therefore chose

to implement menu, hyperlinks and search, but we now see that it is also necessary to provide indexing or browsing.

The main design challenges derived from the formative evaluations are shown in Table 6.1.

Challenge	Description	Possible Solution
Navigation/ Orientation	Navigation within PowerPoint presentations	<ul style="list-style-type: none"> • Alternative ways of presenting the content • Reduce degree of flexibility
	Content overview	<ul style="list-style-type: none"> • Indexing or categories • Provide alternatives to search
Search	Search criteria	Include AND and OR in the search, facilitate for more than one search criteria.
	Too many hits when searching for keywords.	Change database structure so that keyword are not inter connected.

Table 6.1: Design Challenges

6.2 Tackling the Design Challenges

The suggested solutions from Table 6.1 can also have disadvantages that may affect the flexibility of POSbase and its intended use. We now discuss different possible solutions and their effects.

Navigation and Orientation

In the discussion of hypermedia in section 2.1.3, navigational problems were mentioned as important research areas. The problem with navigation within PowerPoint presentations are especially difficult when the presentations include hyperlinks that are connected with other presentations. The users found it difficult to remember where they started and which hyperlinks they had entered. Some students mentioned that the use of the information pages enhanced navigation. The information page consisted of information about an experiment and the connected keywords and

references (shown in Figure 5.6). This made it possible to enter one presentation at a time and always have the information page available in the background. The other alternative was going directly to the experiment with “view file” and entering keywords and references through hyperlinks inside the PowerPoint presentation, which was experienced as confusing by many students. A possible improvement to navigation could be to further enhance this information page, and maybe remove the “view file” option.

Another way of improving the navigation is to use another way of presenting the content, this could i.e. be done with a combination of HTML documents with the use of Macromedia Flash for the animations. In this way the users would always have the main menu present, and orientation could be further facilitated for by navigation bars. This way the user would know what relevant information had been entered and what remained within a topic that could either be broad or narrow. The information could either be explored freely or in a fixed order. If it is to be explored freely there should be an overview showing the related information and in this marking what had been entered and what remained so that the user knew when he had finished exploring that topic.

There are also disadvantages with this way of presenting the content. It is unlikely that the contributors are familiar with the tools needed, and it may therefore be more difficult to contribute to POSbase, which is one of the main ideas behind the project. Expert knowledge within the field of web-publishing would be demanded from the administration, indicating more work than was intended. One of the main goal of POSbase is to provide lecturers with presentations that could be downloaded and adapted for use in own lectures, or used online. To overcome this problem PowerPoint presentations could be given as a supplement, containing the same information as the web-pages.

POSbase is designed to be a flexible system. To improve the navigation and orientation, another alternative solution would be to make the system less flexible than

today. The use of hyperlinks within the presentations could be reduced in order to enhance orientation. This could be done by presenting the content in a more fixed order. This order could be arranged in small or large blocks, arranged by single experiments or topics containing more than one experiment.

“Design dialogs to yield closure” (Shneiderman, 1998) was one of the design principles presented in Table 2.4 (chapter 2). The degree of flexibility in POSbase today does not provide very well for closure, especially not when entering through “view file”. This is because the user does not know when he/she is finished exploring one topic. This could be enhanced with providing less hyperlinks within the PowerPoint presentations. Presenting the content as web-documents (HTML), as described above, could furthermore improve this with presenting an overview over what information comes together.

Overview of the database content is another important issue that needs to be considered and could be done by making a hierarchical structure of the scientific fields or other categories of the content. This could either be used to support search indirectly with providing the users with cues as to what can be found in POSbase, or be used to support browsing. In this way the users could enter the content by selecting more and more narrow descriptions.

Search

The possible solutions described so far refer to challenges given high priority. The challenges concerning search have lower priority. This is because the search currently works, but could be more optimal. There are fewer considerations as these challenges do not affect the project goals.

We did not provide for search with more than one word. This was because we feared that it could expand the search too much and that it would be more difficult for the users to find what they were looking for. If the search included the logic operators AND and OR, then the use for several words could improve the search, especially the

simple search. Another problem that leads to many hits in the current system, is the structure of the database. Each experiment is connected to many keywords and at least one reference. Each keyword is also connected to several other keywords or experiments. If the users search for “cognition” this keyword can be found in both experiments and keywords, and often quite many. Therefore the result list does not contain only experiments or keywords that are about cognition, but also those that are relevant for that topic.

6.3 Strengths and Weaknesses

In this section we present our reflections on the development and evaluation of POSbase regarding the strengths and weaknesses.

6.3.1 Development Process

One of the main advantages of the project is the excellent cooperation within the team where communication has worked very well. This has facilitated progress and the decision making process and applies both to the development stage and the evaluation stage. In many ways it can be said to be the main prerequisite that made the whole project feasible despite the tight schedule. Especially the agile approach, presented in chapter 2, emphasises this feature, and the first of their principles is “Individuals and Interactions over Processes and Tools”.

We did not follow just one methodology, but adapted the existing theories discussed in chapter 2, to fit our needs. This was a relatively small project with few people involved, and we were two people filling all the roles in the development and evaluation process. The development was done iteratively with early prototypes that were revised and evaluated, which proved very useful for this project. We also had close contact with the target user during the whole process. These two features were the main ingredients in our process.

According to the Capturing Requirements Chart in Figure 2.6 (chapter 2) availability is

one of the issues covered in *Additional and Non-functional Requirements*. In the planning phase we assumed that most students had computer labs with internet connections available at the university. Despite this, the interviews revealed that the undergraduate students had problems with availability, and that the computer labs were of limited capacity and often full. On the advanced courses, approximately 50% of the students had used or used POSbase, while on the undergraduate courses this number was considerably lower. Although some students had access to the Internet at home, we assume that availability can be one reason why POSbase was less used on the undergraduate courses. The use of POSbase was furthermore voluntarily, and it may well be that the advanced students were more motivated and interested in extra learning material than the undergraduate students. The advanced students did not complain about availability, and in this group approximately half of the students used POSbase. We got some comments from students complaining about too many systems and time constraints. These might be other reasons limiting the use of POSbase.

The timeframe has been the main limitation for this project, and completing the master thesis within the timeframe has proven quite demanding. This especially applies to the first deadline when we had to complete the planning, design, implementation and testing of the system within the scope of two months. As we were not familiar with PHP before we started on this project, we also had to invest some time into this.

Due to the tight schedule some start-up problems occurred when we first introduced the system to the students in October 2003. These were mentioned in section 3.3.4. and can mainly be attributed to insufficient testing before the system was released and that the introduction of the system was not as carefully planned as it should have been. The students therefore did not know which presentations were important for their course, and so did not know what presentations to look for. This was corrected shortly afterwards as the lecturer published a list of relevant titles and topics on the forum. Another problem that occurred was the handling of hyperlinks within PowerPoint by the browsers. In Netscape and Opera the presentations had to run as slide shows in order to access these hyperlinks. We posted a message concerning this on the forum.

There were also some shortcomings concerning the discussion forum and login, described in 3.3.4. These were also corrected shortly after the first evaluation.

The main problems concerning development were about the structure of the system. After the first evaluation we found that navigation was difficult for the students. This can be attributed to the use of PowerPoint and internal hyperlinks within these presentations. As PowerPoint does not support navigation or orientation cues, it is difficult to know which presentations have been entered, in what sequence and how many remains. This is thoroughly discussed in section 6.1. After the first evaluation we therefore considered different ways of improving this and still keep PowerPoint as the content of the database. The main solution seemed to be to embed the presentations in the HTML documents. In this way the users would at least not lose the main menu when entering different presentations. This however did not improve navigation. We therefore decided to keep the original structure of the system, but tried to improve the navigation within the HTML pages.

6.3.2 Research Methods

A critique raised by Zelkowitz & Wallace (1998) is that the term “experiment” is frequently used incorrectly in computer science, and very rarely does it involve any data collection. Often the developers are both experimenters and the subjects of study, and the study is therefore potentially biased. A similar source of bias can be when the evaluation is performed by the development team. There can be a danger of emphasising the positive features and findings. It is often assumed that one is subconsciously looking for tendencies that will show that the development has been successful and that the finished product is working optimally.

We have tried to avoid bias by considering our own roles during the whole lifetime of the project. The subjects in our study were students, which are one of the main target user groups for POSbase. As we are dealing with users' subjective opinions, both through questionnaires and interviews, bias is difficult to overcome. By presenting a broad range of questions from the questionnaire, both in the text and in appendices,

and by quoting long extracts from the interviews we hope to overcome this problem. We have also provided examples of how we transcribed the interviews (appendix D) and the tables that we used to categorise and compare the interviews (appendix E).

We chose to look at the user reactions about POSbase and from these deduce about the usability and satisfaction. This was achieved through different methods; mainly questionnaires and interviews. According to the ISO standard definition of usability given in chapter 2, our main focus was satisfaction. We also emphasised efficiency and effectiveness by observation of system usage and questions concerning learnability. The user reactions found towards POSbase have proven very useful for the evaluation and for stating the new challenges that must be explored. Some problems that occurred during the evaluations can have affected the outcome of the evaluations and as such the credibility of the findings. Such factors have to be considered and we now discuss the potential limitations and problems discovered.

The questionnaire provided us with rich and varied material for our analysis. However some of the questions in the questionnaire may have been ambiguous. The students may therefore have interpreted them differently from our intentions. This especially concerns three questions regarding navigation and layout (questions 8-10; see appendix A). When we refer to “pages” in our questionnaire we originally thought of the HTML-pages that constitutes the framework for the system, but the students may have answered the question with only the “PowerPoint pages” in mind. This can also apply to question 11 (see appendix A), concerning the navigation in POSbase. We can not be sure whether the students were thinking about the navigation within the framework or within the PowerPoint presentations. This was partially supported by findings from the interviews where we learned that some students found the navigation within the PowerPoint especially difficult. It was important for us to be aware of this in order to interpret the data in the right way. However the reliability estimate for the questionnaire was very high, and therefore allows for confidence in the results.

One of the problems with conducting interviews is that the voluntaries recruited may

not be representative of the user population, and that it therefore can be difficult to generalise. We know that some of the interview subjects had used the system more than average, and this can have influenced their responses. However, when comparing the findings from the interviews with the findings from the questionnaire, we see several similarities.

Another problem with interviewing is that the subjects can have a positive attitude towards the interviewers. The subjects were usually aware of the fact that we also had been responsible for the design and development of POSbase. This can have made them more careful in stating their opinions about the system. When starting the interviews and when encouraging them to participate on interviews via e-mail, we made it clear that our goal was to be able to improve POSbase, and that therefore any problem that they had experienced would be of interest to us (appendix H: emails to students). In this way we hoped to convey as many problems as possible. We were however also interested in features they found useful and good, so that these could be kept and also to see if there was disagreement between subjects.

The number of users of POSbase and respondents in each evaluation differed, especially for the interviews/observations. This can be due to different factors concerning the courses.

We tried to get volunteers for the interviews from both undergraduate and advanced courses, but had no luck with the undergraduates in the second evaluation. During the first evaluation we followed the undergraduate course much more than during the second evaluation, and the students therefore recognised us and sometimes asked us questions in the break. This can have made it easier for them to volunteer for interviews.

There were also differences in how the system was introduced to the students and how much they were encouraged to use it. In the first evaluation we introduced POSbase ourselves. In the second evaluation the lecturer introduced POSbase. For the

undergraduate course in the second evaluation the system was not introduced in the beginning of the course, but a week later, as it was not completely finished. Because of this the lecturer also provided extra lecture notes on the “Studentportalen” during the second evaluation as he felt he could not stop after the first time. This is a factor that can have influenced the students' motivation for using POSbase, and can maybe be one of the reasons for a lower percentage of users in the second evaluation (91 of 881 compared to 85 of 316).

A general limitation of the evaluations may be that they were too strongly connected to specific courses. The students expected the system to be different from its intentions, and this might have affected the outcome, specially concerning satisfaction. However, we think that the design challenges revealed concerning different usability issues are credible and relevant.

Introducing new technology into existing teaching requires much effort from both the developers as well as the students. It takes time for users to accept a new system and getting used to it. The system has to be useful for the students to be motivated for taking the system into use. As our project had a limited timeframe, this issue might have been underrated. Most of the students who had not used POSbase explained this by telling us that they could not find the time, and that they already had too many portals. Points that were mentioned to explain why some students did not use POSbase were:

- That there were too many web-portals for the courses, and many students saw POSbase as just another and found it too much. This can indicate that we had not explained the idea behind POSbase well enough as they thought it was a course-portal. This can also help explain why they anticipated the material to be organised by the lectures.
- Some (advanced students) commented on the rather limited amount of content in POSbase, and said that they would enjoy it even more if there were a broader spectre of experiments from different psychological fields.

7. Conclusion

The previous chapter discussed the findings as regards the research question and the methodological framework and its implications for the findings. Here we present our conclusions as to the project's achievements and future work.

7.1 Intentions and Achievements

The POSbase project aims at providing an online collection of research experiments and related information within various scientific fields. Our goal for the project was to develop and evaluate a prototype of POSbase in cognitive psychology learning. The focus for the formative evaluations was to discover new design challenges that could guide a future development of the system.

We have developed a prototype of POSbase and conducted two formative evaluations. Some improvements were implemented after the first evaluation. In the evaluations we investigated usability and user satisfaction. Both evaluations revealed that students who used POSbase seemed very pleased with the opportunity of having experiments available on the Web. They also liked that the experiments were easily understandable and that they could find important definitions. Based on the user satisfaction we believe that POSbase is a valuable contribution to the students' educational environment and can be a useful resource. The system serves unique functions as a supplement to textbooks, as a tool to get in-depth information about experimental studies, and as a source to look up key terms. Moreover, informal inquiries of psychology instructors suggest that POSbase is a meaningful tool that will both enhance the quality of teaching materials and reduce the teachers' preparation time considerably.

After the first evaluation we solved the printout problem mentioned in the interviews by adding a printout function; students now can print out all the related presentations. Furthermore, in addition to experiments, keywords have been added to the search result. This enables students to begin with a superordinate concept, such as “perception” or “memory”, and to proceed to individual studies from these topics. The

main remaining challenge is to improve navigation and orientation within POSbase.

7.2 Future Work

Further development of POSbase needs to tackle the design challenges that were presented in chapter 6. These challenges mainly concern navigation, content overview and search (Table 6.1).

Students are just one of the user groups for POSbase. Future work should consider the remaining groups which are lecturers and other professionals that want to contribute to POSbase or use it for downloading educational material. The contribution pages were partly implemented and were not included in the evaluations. Future work should include design and completion of these pages and a formative evaluation should be conducted.

We conducted formative evaluation in our project. This was because the main goal was to discover new design challenges that could guide a future development of POSbase. However these evaluations do not consider how POSbase affected the learning of psychology. A summative evaluation can be conducted in order to provide data on the effectiveness of the instructional intervention, according to the instructional objectives. This can contribute to measuring the learning effects of POSbase for students.

So far, POSbase has been used for cognitive psychology. In the future POSbase should include other scientific fields. Possible application domains for POSbase are philosophy, religion, and the arts. Instead of scientific studies, single theoretical elements can be presented and interconnected, facilitating the integration of theories and models.

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Appendix A:
The Questionnaire

Dette spørreskjemaet vil danne deler av grunnlaget for to hovedfagsoppgaver ved Institutt for Informasjonsvitenskap. Informasjonen vil også bli brukt til å videreutvikle og forbedre POSbase. Velg **ett** alternativ for hvert spørsmål. Dersom spørsmålet ikke passer, eller du ikke har noen formening, velg "ikke egnet".

1 Generelt

1. ST-Nummer/brukernavn brukt i POSbase:
2. Alder:.....
3. Kjønn: Mann Kvinne

2 Bruk av POSbase

4. Til sammen hvor mange ganger brukte du systemet?
 Ingen
 1
 2
 3
 4-6
 7-9
 Mer enn 9

Dersom ditt svar på spørsmål 4 var *ingen*, kommenter gjerne her hvorfor du ikke brukte systemet:

.....
.....

5. Ca hvor mye tid brukte du hver gang du brukte systemet?
 Mindre enn 5 minutter
 Mellom 5 og 10 minutter
 Mellom 10 og 15 minutter
 Mer enn 15 minutter ikke egnet
6. Hvor brukte du vanligvis systemet?
 Skolen
 Hjemme
 Arbeid
 Annet ikke egnet

3 Rangering

7. Generelle reaksjoner til systemet

Veldig dårlig

1 2 3 4 5 6 7 8

Veldig bra

9 ikke egnet

Frustrerende

1 2 3 4 5 6 7 8

Tilfredsstillende

9 ikke egnet

Kjedelig

1 2 3 4 5 6 7 8

Stimulerende

9 ikke egnet

Vanskelig

1 2 3 4 5 6 7 8

Lett

9 ikke egnet

Om sidene

8. Mengden informasjon på en side var
Mangelfull

1 2 3 4 5 6 7 8

Tilstrekkelig

9 ikke egnet

9. Organiseringen av informasjonen på en side var
Forvirrende

1 2 3 4 5 6 7 8

Klargjørende

9 ikke egnet

10. Komme tilbake til forrige side var
Umulig

1 2 3 4 5 6 7 8

Lett

9 ikke egnet

Læring

11. Å lære å navigere i POSbase var
Vanskelig

1 2 3 4 5 6 7 8

Lett

9 ikke egnet

12. Få oversikt over de ulike mulighetene var
Vanskelig

1 2 3 4 5 6 7 8

Lett

9 ikke egnet

Andre kommentarer til systemet/Problemer:

.....
.....

4 Erfaringer med bruk av POSbase

Hjelp

13. Hvor ofte brukte du systemets hjelpeside?

Aldri
1 2 3 4 5 6 7 8 Alltid
9

14. Var hjelpesiden nyttig?

Ikke i det hele tatt Veldig

1 2 3 4 5 6 7 8 9 ikke egnet

Diskusjonsforum

15. Hvor ofte brukte du diskusjonsforumet?

Aldri
1 2 3 4 5 6 7 8 Alltid
9 ikke egnet

16. Å bruke diskusjonsforumet var
Vanskelig

1 2 3 4 5 6 7 8 9 Lett ikke egnet

17. Var diskusjonsforumet nyttig?

Ikke i det hele tatt Veldig

1 2 3 4 5 6 7 8 9 ikke egnet

18. Synes du diskusjonsforumet ga deg en bedre forståelse av temaer innen psykologi?
Ikke i det hele tatt Veldig

1 2 3 4 5 6 7 8 9 ikke egnet

Kommentarer/forbedringer til diskusjonsforum:

.....
.....

Søk

19. Hvilken søkemetode foretrakk du å bruke i POSbase?

Enkelt søk

Avansert søk

ikke egnet

20. Søkeprosessen i POSbase var
Vanskelig

1 2 3 4 5 6 7 8 9 Lett ikke egnet

21. Fant du det du lette etter?
Aldri

1 2 3 4 5 6 7 8 9 Alltid

ikke egnet

22. Å forstå søkeresultatet var
Vanskelig

1 2 3 4 5 6 7 8 9 Lett

ikke egnet

23. Mengden informasjon i søkeresultatet var

- Utilstrekkelig
- Tilstrekkelig
- Overveldende
- ikke egnet

24. Åpne/lagre filene i søkeresultatet var
Vanskelig

1 2 3 4 5 6 7 8 9 Lett

ikke egnet

25. Brukte du linkene inne i PowerPoint presentasjonene?
Aldri

1 2 3 4 5 6 7 8 9 Alltid

ikke egnet

26. Var disse linkene nyttige?
Ikke i det hele tatt

1 2 3 4 5 6 7 8 9 Veldig

ikke egnet

Kommentarer/forbedringer til søk:

.....

.....

5 Psykologi og POSbase

27. Synes du innholdet i POSbase var relevant for forelesningene?
Ikke i det hele tatt

1 2 3 4 5 6 7 8 9 Veldig

ikke egnet

28. Hvor nyttig var innholdet i POSbase for å lære om kognitiv psykologi?
Ikke i det hele tatt

1 2 3 4 5 6 7 8 9 Veldig

ikke egnet

29. Synes du det var nyttig å ha presentasjoner av forskningseksperimenter tilgjengelig på nett?

Ikke i det hele tatt

Veldig

1 2 3 4 5 6 7 8 9

ikke egnet

30. Hva synes du om å kombinere tradisjonelle forelesninger med nettbasert undervisning?

Veldig dårlig

Veldig bra

1 2 3 4 5 6 7 8 9

31. Vil du fortsette å bruke POSbase?

Ikke i det hele tatt

Veldig mye

1 2 3 4 5 6 7 8 9

ikke egnet

Her kan du velge mer enn et alternativ

32. Innholdet i POSbase databasen var:

Vanskelig å forstå

Lett å forstå

Interessant

Kjedelig

Informativt

Irrelevant

Annet, spesifiser:

ikke egnet

33. Presentasjonene i POSbase egnet seg for:

Lære om ny emner

Erstatte tradisjonelle forelesninger

Repetisjon

Et tillegg til tradisjonelle forelesninger

ikke egnet

Mange takk for at du tok deg tid til å svare på disse spørsmålene!



Appendix B:
The Interview Guide

Bruk av POSbase:

1. Hvor mye tid anslår du å ha brukt på POSbase?
 - Tid?
 - Ant. Ganger?
 - Gjennomsnittlig tid pr. gang?

Reaksjoner til systemet:

2. Hvordan var det å komme i gang med å bruke POSbase til for eksempel søk?
 - Hvorfor?
 - Hva var vanskelig?
 - Hva var lett/Hva har gått bra?
 - Vanskelig/lett å navigere
 - Vanskelig /lett å få oversikt
 - Vanskelig/lett å lære

3. Hva synes du om designen/layouten til POSbase?
 - Hva er bra?
 - Hvorfor?
 - Hva er dårlig?
 - Hvorfor?
 - Hva kan forbedres?

Erfaringer med bruk av POSbase

4. Hva brukte du POSbase til hovedsakelig?

- Hente ut forelesningsnotater, finne frem informasjon til oppgave.. etc.
- Fikk du forventet resultat?

5. Brukte du noen gang:

a) Diskusjonsforumet?

- Til hva?
- Hva var nyttig/bra?
- Hva var ikke nyttig/ikke bra?
- Lett/vanskelig?
- Eventuelt hvorfor/hvorfor ikke?

b) Hjelpesidene?

- Til hva?
- Hva var nyttig/bra?
- Hva var ikke nyttig/ikke bra?
- Lett/vanskelig?
- Eventuelt hvorfor/hvorfor ikke?

6. Hvilken søkemetode foretrakk du?

- Hvorfor?
- Evt. hvorfor brukte du ikke søkefunksjonene?

7. Var søkeresultatet oversiktlig/enkelt å forstå?

- Eventuelt hva var galt/vanskelig?
- Åpne/lagre? – Lett/vanskelig?
- Forslag til forbedring?

8. Brukte du linkene i søkeresultatet? Forklar linkene! -> File, View File

- Eventuelt kom du frem til forventet resultat?
- Hvilke evt. brukte du? Ref, Key. Pres.?
- Eventuelt hvorfor ikke?

9. Brukte du linkene inne i PowerPoint presentasjonene?

- Eventuelt hadde du noen problemer i denne sammenheng?
- Eventuelt hvorfor ikke? Browser?

10. Hva synes du var:

- a) Det beste med POSbase?
 - Hvorfor?
- b) Det dårligste med POSbase?
 - Hvorfor?

Psykologi og POSbase

11. Hva tror du formålet/bruksområdet til POSbase er? (om vi har formidlet ideen bra nok?)

12. Hvordan synes du POSbase fungerte i kombinasjon med forelesninger?

- Hva slags utbytte/hvordan?
- Fordel/ulempe med IKT i kombinasjon med forelesninger?
 - Noe å si for læringssituasjonen?
 - Motiverende?
 - Om de synes det blir brukt for mye/lite IKT på skolen?

13. Gav bruken av POSbase deg noen faglig nytte?

- Hvordan/Hva/På hvilken måte?
 - Relevant/ikke relevant til forelesning? (repetisjon/forberedelse)
 - Nyttig/ikke nyttig?
 - Diskusjonsforum – brukt, så på spørsmål/svar?
- Eventuelt hvorfor ikke?

14. Hva synes du om hvordan det faglige innholdet ble presentert i PowerPoint presentasjonene?

- Hvorfor/Hvordan/Hva:
 - Hva var bra
 - Hva var dårlig?

Annet

15. Hadde du noen gang problemer du ikke forstod hvordan du skulle løse?

- Hva?
- Husker du noen spesielle episoder som var spesielt frustrerende/tilfredstillende? (veldig fornøyd med/ missfornøyd)
- Følte du noen gang at du ikke mestret systemet?

16. Om det var noe du kunne endre med POSbase, hva ville det være?

- Hva/Hvordan/Hvorfor?
- Er det noe du savner i POSbase (manglende funksjonalitet/egenskaper)?

17. Har du tidligere brukt lignende systemer som for eksempel bibsys, online leksikon, ISI etc?

- Hvilke?
- Hva synes du om POSbase sammenlignet med disse/dette?

18. Vil du fortsette å bruke POSbase i fremtiden?

- Hva/Hvorfor/Hvorfor ikke

Appendix C
Data Material from the Questionnaire
First and Second Evaluation

First Evaluation (Autumn 2003)

Descriptive Statistics:

<i>Number</i>	<i>Question</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>
2	Alder på respondenten	29	24,45	6,500
7a	generell reaksjon dårlig/bra	26	5,35	2,077
7b	generell reaksjon frustrerende/tilfredsstillende	27	4,74	1,873
7c	generell reaksjon kjedelig/stimulerende	26	5,42	1,501
7d	generell reaksjon vanskelig/lett	28	5,32	2,144
8	Mengden informasjon på en side var mangelfull/tilstrekkelig	26	5,73	1,733
9	Organiseringen av informasjonen på en side var forvirrende/klargjørende	27	5,81	1,777
10	Komme tilbake til forrige side var umulig/lett	26	5,38	2,434
11	Å lære å navigere i POSbase var vanskelig/lett	27	4,89	2,423
12	Få oversikt over de ulike mulighetene var vanskelig/lett	26	4,23	2,338
13	Hvor ofte brukte du systemets hjelpeside aldri/alltid	28	2,00	2,143
14	Var hjelpesiden nyttig ikke/veldig	6	3,83	1,835
15	Hvor ofte brukte du diskusjonsforumet aldri/alltid	27	3,74	2,877
16	Å bruke diskusjonsforumet var vanskelig/lett	17	7,41	1,622
17	Var diskusjonsforumet nyttig ikke/veldig	20	6,05	2,544
18	Ga diskusjonsforumet deg en bedre forståelse av temaer innen psykologi	17	5,12	2,261
20	Søkeprosessen i POSbase var vanskelig/lett	28	6,00	2,277
21	Fant du det du lette etter aldri/alltid	29	5,24	2,614
22	Å forstå søkeresultatet var vanskelig/lett	27	5,67	2,602
24	Åpne/lagre filene i søkeresultatet var vanskelig/lett	24	6,00	2,554
25	Brukte du linkene inne i PowePoint presentasjonene aldri/alltid	25	5,00	3,028

26	Var disse linkene nyttige ikke/veldig	21	5,95	2,224
27	Synes du innholdet i POSbase var relevant for forelesningene? Ikke/veldig	27	6,70	2,672
28	Hvor nyttig var innholdet i POSbase for å lære om kognitiv psykologi	25	6,08	2,272
29	Synes du det var nyttig å ha presentasjoner av forskningseksperimenter tilgjengelig på nett? ikke/veldig	24	7,62	2,163
30	Hva synes du om å kombinere tradisjonelle forelesninger med nettbasert undervisning?	29	6,24	2,734
31	Vil du fortsette å bruke POSbase? ikke/veldig mye	28	4,96	2,252
	Valid N (listwise)	2		

Frequency tables:

Question 3: Sex

<i>Sex</i>	<i>Frequency</i>	<i>Percentage</i>
Female	19	65,5%
Male	10	34,5%
Total	29	100%

Question 4: How many times did you use the system

	<i>Frequency</i>	<i>Percent</i>
None	0	0%
1	8	27,6%
2	7	24,2%
3	5	17,2%
4-6	4	13,8%
7-9	0	0%
More than 9	5	17,2%
Total	29	100%

Question 5: About how much time did you use every time you entered POSbase

	<i>Frequency</i>	<i>Percent</i>
Less than 5 min	3	11.1%
5-10 min	10	37%
10-15 min	6	22,2%
More than 15 min	8	29,6%
Total	27	100%

Question 6: From where did you usually use the system ?

	<i>Frequency</i>	<i>Percent</i>
School	15	51,7%
Home	13	44.8%
Work	1	3,4%
Other	0	0%
Total	29	100%

Question 19: Which search method did you prefer to use in POSbase?

	<i>Frequency</i>	<i>Percent</i>
Simple Search	22	88%
Advanced Search	3	12%
Total	25	100%

Question 23: Amount of information in the search result:

	<i>Frequency</i>	<i>Percent</i>
Inadequate	5	18,5%
Adequate	20	74%
Overwhelming	2	7,4%
Total	27	100%

Question 32: The content in the POSbase database was:

	<i>Frequency</i>
Not applicable	1
Difficult to understand	4
Easy to understand	16
Interesting	11
Boring	3
Informative	18
Irrelevant	1
Other	1

Question 33: The presentations in POSbase were suitable for:

	<i>Frequency</i>
Not applicable	0
To learn about new topics	8
To replace traditional lectures	1
Repetition	18
As additional for traditional lectures	18
Other	2

Second Evaluation (Spring 2004)

Descriptive Statistics:

<i>Number</i>	<i>Question</i>	<i>N</i>	<i>Mean</i>	<i>Std. Deviation</i>
2	Alder på respondenten	31	23,71	5,878
7a	generell reaksjon dårlig/bra	31	4,90	1,535
7b	generell reaksjon frustrerende/tilfredsstillende	31	4,81	1,869
7c	generell reaksjon kjedelig/stimulerende	31	5,06	1,731
7d	generell reaksjon vanskelig/lett	30	5,17	2,479
8	Mengden informasjon på en side var mangelfull/tilstrekkelig	30	5,70	2,037
9	Organiseringen av informasjonen på en side var forvirrende/klargjørende	29	5,07	2,170
10	Komme tilbake til forrige side var umulig/lett	27	6,81	2,321
11	Å lære å navigere i POSbase var vanskelig/lett	31	4,61	2,472
12	Få oversikt over de ulike mulighetene var vanskelig/lett	31	4,03	1,941
13	Hvor ofte brukte du systemets hjelpeside aldri/alltid	31	1,71	1,189
14	Var hjelpesiden nyttig ikke/veldig	14	4,36	1,646
15	Hvor ofte brukte du diskusjonsforumet aldri/alltid	31	2,19	2,344
16	Å bruke diskusjonsforumet var vanskelig/lett	13	6,46	2,066
17	Var diskusjonsforumet nyttig ikke/veldig	14	5,29	1,939
18	Ga diskusjonsforumet deg en bedre forståelse av temaer innen psykologi	12	4,50	1,382
20	Søkeprosessen i POSbase var vanskelig/lett	26	5,88	2,438
21	Fant du det du lette etter aldri/alltid	24	5,33	2,180
22	Å forstå søkeresultatet var vanskelig/lett	25	6,32	1,930
24	Åpne/lagre filene i søkeresultatet var vanskelig/lett	21	6,33	2,536
25	Brukte du linkene inne i PowePoint presentasjonene aldri/alltid	25	4,84	2,703

26	Var disse linkene nyttige ikke/veldig	16	6,44	1,459
27	Synes du innholdet i POSbase var relevant for forelesningene? Ikke/veldig	27	6,59	1,907
28	Hvor nyttig var innholdet i POSbase for å lære om kognitiv psykologi	25	6,52	1,475
29	Synes du det var nyttig å ha presentasjoner av forskningseksperimenter tilgjengelig på nett? ikke/veldig	26	7,96	1,216
30	Hva synes du om å kombinere tradisjonelle forelesninger med nettbasert undervisning?	30	6,40	2,401
31	Vil du fortsette å bruke POSbase? ikke/veldig mye	29	5,97	1,822
	Valid N (listwise)	3		

Question 3

<i>Sex</i>	<i>Frequency</i>	<i>Percentage</i>
Female	16	51,6%
Male	15	48,4%
Total	31	100%

Question 4

How often did you use the system:

<i>Number of times</i>	<i>Frequency</i>	<i>Percentage</i>
None	-	-
1	9	29%
2	11	35,5%
3	2	6,5%
4-6	8	25,8%
7-9	1	3,2%
More than 9	-	-
Total	31	100%

Question 5

Approximately how much time did you spend each time you used the system?

<i>Time</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Less than 5 minutes</i>	2	6,5%
<i>Between 5 and 10 minutes</i>	11	35,5%
<i>Between 10 and 15 minutes</i>	13	41,9%
<i>More than 15 minutes</i>	5	16,1%
<i>Total</i>	31	100%

Question 6

Where did you usually use the system?

<i>Place</i>	<i>Frequency</i>	<i>Percentage</i>
<i>School</i>	18	58%
<i>Home</i>	11	35,5%
<i>Work</i>	-	-
<i>Other</i>	2	6,5%
<i>Total</i>	31	100%

Question 19

Which search method did you prefer to use?

<i>Method</i>	<i>Frequency</i>	<i>Percentage</i>
<i>Simple</i>	16	51,6%
<i>Advanced</i>	9	29%
<i>Total</i>	25	80,6%

Question 23

Amount of information in the search result was:

	<i>Frequency</i>	<i>Percentage</i>
<i>Inadequate</i>	3	9,7%
<i>Adequate</i>	15	48,4%
<i>Overwhelming</i>	4	12,9%
<i>Total</i>	22	71%

Question 32

The content of POSbase

	<i>Frequency</i>
<i>Difficult to understand</i>	5
<i>Easy to understand</i>	9
<i>Interesting</i>	9
<i>Boring</i>	2
<i>Informative</i>	18
<i>Irrelevant</i>	-
<i>Other</i>	1
<i>Not applicable</i>	2

Other:

- uoversiktlig

Question 33

The Presentations in POSbase were suitable for:

	<i>Frequency</i>
<i>Learning about new topics</i>	8
<i>Replace traditional lectures</i>	4
<i>Repetition</i>	17
<i>An addition to traditional lectures</i>	22
<i>Other</i>	3
<i>Not applicable</i>	1

Other:

- får kort og konsis info om fenomener/uttrykk etc.
- finne meget spesifikke forsøk
- Generell kommentar: Men hvorfor enda et nytt nettsted å forholde seg til? Forrige semester hadde vi 4 nettsteder å hente info om studiet og jeg klarte ikke å finne ut når eksamen var!

Appendix D:
Interview Transcriptions

Transkripsjon av intervju 2 grunnfag – Subjekt 2 (Første evaluering)

I: Hvor mye tid anslår du å ha brukt på POSbase?

2: Jeg veit ikke ... i hvert fall 5-6 timer, jeg har det oppe og så leser jeg og ser om jeg kan bruke noe fra det. Jeg har brukt det i forhold til 101 også .. en del av forsøkene er også nevnt i 101 ... gikk gjennom det før forelesning i går

I: Hvordan synes du det var å begynne å bruke det? Å komme i gang første gang?

2: Jeg synes det var litt vanskelig først fordi man trenger stikkordene for å komme i gang, men etter at jeg fant ut dette pleide jeg bare å skrive ned overskriftene på for eksempel forsøk som han viste frem til oss og så går jeg videre derfra. Først tok jeg bare på "view file", men da får man ikke noe forklaring på begreper og sånn da ... da må man på den siden hvor man har alle forsøkene (Informasjonssiden) ... der får man kommet seg rundt.

I: Hva synes du om designen/layouten – hvordan det ser ut?

2: Jeg synes den ser bra ut ... Er det mulighet for å lage en oversikt over alt som er inne i der? (tror det er oversikt over alle eksperimenter, eller filer hun mener) ... Jeg har sett han har gått igjennom en liste og valgt ut fra denne...det hadde vært litt greit... (viser dette til henne på maskinen)

I: Hva brukte du POSbase til hovedsakelig? – repetisjon? (dette ble nevnt tidligere i intervjuet)

2: Ja egentlig, men jeg synes det er greit å bruke i forhold til både 101 og 103 så er det en del begreper som det er ganske bra definisjon på og du kan også se i forhold til ved å klikke deg rundt se sammenhengen i de ulike begrepene, det var bra ...han har gjort det veldig lett å forstå med illustrasjoner og sånn.

I: Har du noen gang brukt diskusjonsforumet?

2: Nei

I: Ikke sett på det engang?

2: Jo, har vært inne og sett, men har liksom ikke hatt noe å si

I: Hjelpesidene, har du brukt de?

2: Nei, det tror jeg ikke nei

I: Når du søkte, hvilken søkemetode foretrakk du – enkelt søk eller avansert søk?

2: Jeg tror jeg har brukt mest enkelt, hvis jeg ikke har funnet det på enkelt så har jeg prøvd det advanced ... hvis jeg ikke har hatt noe mer å fylle inn. Har bare hatt navnet på eksperimentet eller ..

I: Du trenger ikke hele navnet på tittelen...kan bruke ett ord...

2: Nei, men sånn som jeg så det når jeg bare skrev inn forfatter, så kunne jeg likeså godt bruke et enkelt søk

I: Har du prøvd å åpne eller lagre noe?

2: jeg prøvde men det fikk jeg ikke helt til (hun får prøve på maskinene i rommet) hvor bør jeg lagre det hvis jeg skal lagre det hjemme...? (vi foreslår C, siden hun har egen maskin hjemme)(når hun får prøve får hun ikke spørsmålet om hun vil åpne eller lagre, siden den maskinene har krysset av for å huske hver gang.. Hun mente hun hadde prøvd å lagre en gang, men ikke fant igjen det..)

2: Kan man samle det opp (eksperiment og sånn..)? (vi viser henne hvordan hun kan klippe og lime, og hvordan hun kan skrive ut)

2: kan jeg velge hvilke sider jeg vil ha på arket? (vi forklarer at dette må lages som et dokument og

fjerne slidsene som hun eventuelt ikke vil skrive ut)

I: Synes du søkeresultatet var oversiktlig – enkelt å forstå?

2: Ja egentlig, tror bare det tar litt tid til å venne seg til å, for nå synes jeg det fungerer greit, men første gang så skjønte jeg ikke helt hva det var og sånn ...

I: Brukte du linkene inne i søkeresultatet (vi viser frem)?

2: Ja, de fleste, men det var fordi han brukte alle. Jeg ser mest på de eksperimentene som han har gått igjennom. Så hvis du trykker deg gjennom alle disse linkene blir man ført gjennom de linkene som han gikk gjennom på forelesningen.

I: Hva synes du var det beste med POSbase?

2: Egentlig synes jeg det er en bra læremetode, at man kan gå videre, jeg vet ikke...Etter at jeg gikk gjennom dette i går før jeg skulle på forelesning så føler jeg virkelig at jeg lært noe av å gå gjennom disse presentasjonene ... også synes jeg det er bra sånn som han har gjort, at han har tatt eksperimenter og sånne ting, du lærer ganske mye av .. (viser oss resultatsiden og synes denne er bra for å få en oversikt) ... man får begreper og sånn, får definert de og kan trykke på disse hvis man har behov for å vite hva det betyr

I: Hva synes du er det dårligste med POSbase?

2: Jeg veit ikke, har liksom ikke vært borti noe sånt tidligere så jeg har på måte ikke noe å sammenligne med ... i starten synes jeg det var litt vanskelig ... litt sånn rørete, å vite hva man skulle søke etter. Det kunne kanskje vært en link på siden som man kunne trykt ned for å få en oversikt over alt som finnes der.. (vi forklarer at man kan gjøre dette ved å søke på navnet til Rolf)

I: Hva tror du er formålet/bruksområdet til POSbase er?

(Mrk: Vi forklarer dette for henne selv, fikk ikke spurt siden hun spurte oss først..)

2: Synes det hadde vært fint om det ble flere ulike fag og sånt.

I: Gav bruken av POSbase deg noen faglig nytte?

2: Ja, det synes jeg jo, lærer jo noe ved å gå igjennom det. Du får repetert det han sier og ... ja du lærer jo om eksperiment

I: Hvordan synes du det faglige innholdet ble presentert i PP-presentasjonene?

2: Jeg synes egentlig at det var bra, jeg synes mye av det var veldig klart og bra.

I: Hadde du noen gang noen problemer du ikke forstod du skulle løse? Noen spesielle hendelser som du ikke forventet skulle skje?

2: Nei, tror ikke det. Tror det bare var på begynnelsen når jeg ikke visste hva jeg skulle søke på. Så skulle jeg søke på et ord, tror det var "concept" eller noe og da kom det en del opp og så neste gang jeg var inne var jeg litt mer kjent og jeg tror at etter hvert så lærte jeg litt mer på en måte

I: Vanskelig å få oversikt over hvilke muligheter du hadde?

2: Nei, men eneste muligheten jeg ser er å klikke seg videre på en måte. Det er egentlig bare det jeg gjør. Søker på ord og... jeg vet ikke jeg, er det noe annet man kan gjøre?

I: Hvis det var noe du kunne endre på POSbase, hva ville det være? Forslag til endringer– noe du føler mangler?

2: Nei egentlig ikke, synes det fungerer bra

I: Har du tidligere brukt lignende systemer, for eksempel bibsys, online leksikon etc.?

2: Har brukt sånne online leksikon, men det er bare å skrive inn ordet og få forklaring.. finnes det bedre sånne?

I: Vil du fortsette å bruke POSbase i fremtiden?

2: Ja det tror jeg, så lenge det som står der er relevant for det jeg skal lære så vil jeg jo bruke det

I: Noe du lurer på, eller kommentarer?

2: Nei, egentlig ikke ... det var en side som ikke fungerte, animasjon i en presentasjon... (vi forklarer at dette kan være pga nyere versjoner og lignende..)

I: Hvordan synes du det er å måtte hente ut forelesningsnotatene på denne måten?

2: Ja, jeg synes det fungerer greit, men jeg har aldri hentet det ut før da ... noterer det mer ned på ark ... men jeg synes det på en måte er greit, for vi har jo boka og der kan du lese deg til ting så får man dette i tillegg og det blir en slags avveksling i forhold til boka.

I: Hvordan er boken i forhold til innholdet?

2: Ikke lest så mye i boken egentlig... synes bare det er greit å ha to kilder, så hvis man ikke forstår det i den ene kan man lese i den andre.

I: Hvordan synes du det hadde vært å få det i en utskriftsfil?

2: Vel jeg gjør jo egentlig ikke det...hans notater bruker jeg til å repetere forelesningen, bruker jeg bare det (også fordi vi har fått spørsmål i timene...) Jeg har bredbånd hjemme så.

Transkripsjon av intervju 3 embet: Subjekt 13 (2. evaluering)

I: Hvor mye tid anslår du å ha brukt på POSbase?

13: ehhh ... vet ikke helt. Jeg har brukt en del tid på å svare, skrive et sånt innlegg på forumet og så har jeg sett igjennom et par presentasjoner. Så jeg vet ikke jeg, sånn fire, fem timer.

I: Ja, og antall ganger?

13: Kanskje fem ganger.

I: Hvordan synes du det var å komme i gang med å bruke POSbase?

13: ehhm .. det tok litt tid før jeg skjønnte at du måtte søke, eller før jeg slo meg til ro med at jeg måtte søke for å finne noe. ...

I: Login, gikk det greit?

13: Ja

I: Var det noe som var spesielt vanskelig?

13: Nei, ... det er litt sånn at jeg tenkte at det var knyttet til forelesningene hans og at der ville jeg på en måte finne forelesningene. Jeg kunne tenkte meg å ha en slags liste over forelesningsnotater og forelesningene og så da at jeg kunne klikke på det og komme rett inn og være sikker på at jeg da hadde alt som han hadde gjennomgått i timen. Så det var vanskelig å finne. (latter)

I: Hva synes du om layouten på sidene til POSbase?

13: Den er fin. Det er kanskje ... (surfer litt på sidene, ser på «HOME» -der var det mye tekst) Den er bra den. Logout er litt vanskelig å finne kanskje ...

I: Hva brukte du POSbase til først og fremst?

13: eh ... først og fremst og se gjennom de PowerPoint presentasjonene. Og svare på innlegg eller spørsmål på forumet.

I: Mmm, ja, diskusjonsforumet, du brukte det?

13: Ja, jeg brukte det litt. Men jeg er litt sånn derre, sånn litt frustrert over at det er så mange sånne portaler og ting. ... Det finnes for eksempel på studentportalen, min side, så finnes det diskusjonsforumet. Det blir aldri brukt. Det har aldri vært noen sånn debatt der. Men det hadde vært greit å hatt ... Vi har brukt «blackboard» og der har det vært diskusjonsforum, så har vi POSbase med et diskusjonsforum, men ideen med studentportalen og med å ha ett sted, den er god. Nå for eksempel skulle jeg prøve å finne POSbase og se litt på det før jeg kom hit og så hadde jeg 10 minutter et kvarter, men jeg klarte ikke finne det for det at ... hadde jeg logget meg på min egen maskin så hadde jeg funnet det for der har jeg et bokmerke, men ... jeg måtte søke og så fant jeg det ikke på min side, jeg fant ikke noen link der på studentportalen. Så søkte jeg på Universitetet sine nettsider. Jeg søkte på POSbase, men fant det ikke. ... så det er litt forvirring, alle disse stedene, alle disse adressene du må ha, og så på en maskin der har du bokmerke, men på en annen maskin har du ikke ...

I: Hjelpesidene, hadde du bruk for de, eller har du brukt de?

13: Vet ikke om jeg har brukt de .. skal se (åpner sidene) ... vet ikke, tror det var litt sånn der instruksjoner fra Reber på mail som jeg brukte for å komme i gang.

I: Hvilken søkemetode foretrakk du?

13: Skal vi se (åpner sidene) .. all categories.

I: Ja, på den enkle, altså ikke den avanserte (peker på skjermen)?

13: Ja, jeg brukte den jeg. For det at umiddelbart så (viser på skjermen avansert søk) så sier tittel meg kanskje noe, keyword er ikke sånn som jeg pleier å bruke, source vet jeg ikke hva er . Jeg vet egentlig ikke hva POSbase inneholder. (viser at han kan gå inn på beskrivelse av søkekriteriene. Det visste han ikke. Blar litt i disse).

13: Altså det er presentasjoner og eksperimenter. Disse eksperimentene er allerede presentert i journaler som vi kan søke på via psychinfo og sånne ting, men det her er da PowerPoint presentasjoner av de samme eksperimentene, men enklere å forstå på en måte. Det er kanskje det?

I: Ja, vi tror det ...

I: Når du fikk opp søkeresultatet, synes du det var enkelt å forstå?

13: Nei, ... , skal vi se. Hvis jeg da skal ha ... (viser oss et eksempel søk på skjermen, skriver inn to ord med «&» mellom) noe sånt ville jeg søkt på for det er et tema vi hadde. Og så får jeg ikke noe resultatet. (viser igjen, forklarer at det ikke er lagt opp til bruk av flere søkekriterier enda. Prøver en gang til med ett ord og får opp en liste). Og så ville jeg lure på hvor i all verden er det. Så ville jeg tenkt kanskje det er her (går inn på en presentasjon), men jeg vil måtte sjekke liksom (går gjennom en presentasjon) ...

13: Derfor så ville jeg foretrekke å hatt det sånn mer som hierarkisk tre eller sånn derre at det stod øverst Rolf Rebers forelesninger og så nedover med alt han hadde brukt i de forelesningene. Det hadde vært nyttig. Og så når det er en sånn database med eksperimenter, det hadde vært kjempenyttig å all verdens psykologiske eksperimenter presentert som PowerPoint, for da når jeg hadde en artikkel foran meg så kunne jeg bare gå til POSbase så kunne jeg få den pedagogiske versjonen der. For de er forferdelig tunge å lese de her artiklene.

(forklarer litt om ideen bak POSbase – liten diskusjon oss imellom om dette, vi spør om det finnes noe tilsvarende etc. og han forklarer)

13: Siden det er så tilfeldig hva som vil ligge i denne databasen så vil ikke søkefunksjonen ikke vil være fullstendig og da er det viktig at det er skreddersydd for ett kurs sånn som Rolf Reber sitt.

I: Hva synes du om linken inne i søkeresultatet?

13: Ja de forklarer et for eksempel eller ... og det er jo og veldig nyttig, absolutt. Det var bare jeg som ikke skjønnte at jeg kunne åpne de i ett nytt vindu.

I: Ja, da tenker du på de linkene som var inne i selve PowerPoint presentasjonene?

13: Ja

I: Hva med de som du får opp på den info-siden? (viser på skjermen)

13: Jeg har gått på Rolf Reber noen ganger og fått den her (viser oss ppt-presentasjonen). (Ser på siden – er inne på informasjon for et nøkkelord) Jeg har egentlig ikke sett på det. Men ok det er en presentasjon av et emne og så er det relevante eksperimenter til det ja. (ser gjennom listen) Men det her er jo ikke et eksperiment er det det? (åpner en presentasjon) Det her er en teori. Hva slags system er det her. Er den bare feilplassert eller?

I: Det vet ikke vi, vi kan ingenting om innholdet ...

13: Det er absolutt relevant for «emotions», men det er kanskje ikke et eksperiment, og «James Lange teorien» er i alle fall ikke det (en annen på listen). ...

I: Hva synes du var det beste med POSbase?

13: Det beste ... hm ... at det er PowerPoint presentasjoner av ... ting som er relevant for kurset. Det er det beste. Det er en del andre som har brukt det og, vi har en som lagde en del presentasjoner og

la det i en mappe på studentportalen på min side, og de og var nyttige på samme måten. Men da var det litt enklere å vite hva som var relevant for kurset, for der lå jo alt som var knyttet til kurset. Så de er litt vanskeligere å finne hva som er relevant her da.

I: Så hva synes du var det dårligste med POSbase?

13: Ja, det at det er vanskelig å vite hva som er relevant.

I: Hva tror du formålet til POSbase er?

13: Jeg begynner etterhvert å skjønne at det er ... at det skal være PowerPoint presentasjoner av allverdens psykologiske eksperimenter .. som man kan søke etter.

I: Hvordan synes du det har fungert å bruke POSbase nå i kombinasjon med forelesninger?

13: mmm ... litt bra, men litt vanskelig å knytte til forelesningene på grunn av det som jeg har sagt tidligere.

I: Ga bruken av POSbase deg noen faglig nytte?

13: Ja, når jeg fant det som jeg lette etter.

I: Og det faglige innholdet?

13: Det synes jeg var bra. Men det er jo folk som kan mer enn meg som har lagd det så.

I: Hadde du noen gang noen problemer som ikke du forstod hvordan du skulle løse?

13: Ja, det der med høyreklikke, åpne i et annet vindu. Og det der med å få oversikt over ... ja ...

I: Ja, så dersom det var noe du kunne endre så ville det være å ?

13: Sann som jeg har brukt POSbase nå ... en ting er hvis POSbase blir en stor database med all verdens eksperimenter ... for da kan jeg godt bruke det uten å ha noe å støtte meg til ... da kan jeg gå å søke å se om det er der ... på lykke og fromme. Men hvis det er knyttet til et kurs , så trenger vi den der oversikten som vi har snakket om.

I: Du snakket om andre liknende systemer tidligere. Hvis du sammenlikner POSbase med andre tilsvarende systemer ... ?

13: ehh ... skal vi. Det er jo enkelt fordi det er ganske få ting du kan vikle deg inn i på en måte. Så sann sett det ... det er bra. Studentportalen synes jeg begynner å bli litt for omfattende. Men den er for enkel til at du kan .. du kan ikke bruke den som studentportal fordi du mangler jo en del andre ting. ...

I: Og de her andre hvor du kunne søke etter ...

13: Åh, ja, det er bare en søkemotor på internett, omtrent som altavista. Eller ikke akkurat sann da. Det er vel en database ... men i forhold til den så er vel ... den synes jeg er litt lettere å finne ting på ... for der ... ja nå kjenner jeg kanskje den bedre ,men der bruker jeg å bruke avansert søk og så søker jeg på nøkkelord og så velger jeg om det skal være i abstract eller i hele teksten. ... eller ikke nøkkelord, ikke forhåndsdefinerte nøkkelord, men bare fritekst. Så er det jo mye større ikke sant så kan jeg snevre det inn og snevre det inn; jeg skal bare nyere studier, ... ja ... så den er jeg mer fortrolig med ja.

I: Vil du fortsette å bruke POSbase tror du ?

13: Jeg kommer til å bruke det ja i dette kurset her til å lete frem det som han har forelest over. Og hvis jeg kommer til andre kurs så kommer jeg sikkert til å bruke det hvis de legger opp til at vi skal bruke det. Senere vil jeg sikkert bruke det hvis det blir en litt omfattende database med mange eksperimenter.

Appendix E: Interview Tables

1. Evaluation

Navigasjon:

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
1	<p>I: Brukte du de linkene inne i powerpoint? 1: Ja I: Fungerte det greit? 1: Jaa, altså linkene fungerer jo greit, men problemet er jo det at hvis du har klikket en del ganger, så hvordan kommer du tilbake til der hvor du opprinnelig var. Det er det ene, det sånn praktiske med det. Det andre er det at når du driver å klikker deg gjennom sånne ting så er vi såpass menneskelige at vi glemmer hvor vi begynte og hvorfor vi begynte der. Vi er litt sånn serielle eller sånt.</p>	<p>det var enkelt og intuitivt å bruke sånn som det er nå</p>
2	<p>Er det mulighet for å lage en oversikt over alt som er inne i der? Det hadde vært litt greit.</p> <p>I: Hva synes du er det dårligste med POSbase? 2: Jeg veit ikke, har liksom ikke vært borti noe sånt tidligere så jeg har på måte ikke noe å sammenligne med ... i starten synes jeg det var litt vanskelig ... litt sånn rørete, å vite hva man skulle søke etter. Det kunne kanskje vært en link på siden som man kunne trykt ned for å få en oversikt over alt som finnes der..</p>	<p>Først tok jeg bare på "view file", men da får man ikke noe forklaring på begreper og sånn da ... da må man på den siden hvor man har alle forsøkene (Informasjonssiden) ... der får man kommet seg rundt.</p>
3	<p>hvis jeg går inn på view file gikk jeg bare på runde på runde og da var det vanskelig å finne ut hvor jeg har vært og hvor jeg skal</p>	<p>(Om resultat-siden) det fant jeg var mye lettere ...</p> <p>men hvis man går inn der (resultatet) og tar hver av filene så følte jeg det var mye mer oversiktelig og lettere å finne ut hvilke sider jeg skulle inn på og hvilke jeg ikke behøvde å gå inn på</p> <p>hvis jeg har forstått det rett, så har alle de som kommer opp i den (res) under den med nøkkelordene og presentasjonene – det er alt som er relevant for det tema</p>

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
5	<p>I: Var søkeresultatet oversiktelig – enkelt å forstå?</p> <p>5: ja når du får opp det? (vi viser på skjermen)</p> <p>5: det var litt forvirrende, hva er det du skal klikke på, det står jo fil, fil, fil... så du må jo lese litt først</p> <p>jeg synes det er veldig greit å bruke det sånn, men jeg savner fortsatt den oversikten, at man kan gå igjennom en forelesning fra start til slutt (View file:)</p> <p>du blir jo litt forvirret, vet jo egentlig ikke helt hvor du starta .. og hvor du går, fremover eller bakover på en måte. Jeg vil ha begge deler</p>	<p>når man først har fått oversikten over det så var det veldig greit, da kan man gå rett inn</p>
6	<p>første gang jeg åpnet den så skjønte jeg ingenting (view file)</p> <p>I: Hadde du noen gang problemer når du skulle bruke disse? (linker i ppt)</p> <p>6: ja det var en gang da jeg trykte meg ganske langt vekk og da kom jeg ikke tilbake igjen, så da bare gikk jeg ut igjen.</p>	
7	<p>I: Om det var noe du kunne endre med POSbase, hva ville det være?</p> <p>7: nei vet ikke jeg, det kunne kanskje vært greit med litt mer oversiktelig... altså den første siden du kommer til..</p> <p>I: At det stod mer informasjon?</p> <p>7: ja, kanskje litt mer forklaring og sånn</p>	
8	<p>det er vanskelig å vite hvor man skal gå, det er greit nok å søke, men hva skal man søke på når man ikke veit hva som ligger der</p>	

Læring:

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
<i>1</i>		<p>I: Hvordan synes du det var å komme i gang første gang du skulle bruke det?</p> <p>1: Det var for så vidt helt greit det altså.</p> <p>I: Når du fikk opp søkerresultatsidene, var det lett å skjønne det?</p> <p>1: Jaa, altså ... (liten pause)</p> <p>1: Ja, for meg var det det, men det var jo bare en liste, og når du ser det at dette er klikkbare resultater så du klikker på det som du tror at er nærmest og så får du opp noe mer. Så sånn sett var det jo ganske intuitivt å skjønne hva du skulle gjøre. Det jo fordi at alle andre sånne søke foregår på stort sett samme måten.</p>
<i>2</i>	<p>jeg synes det var litt vanskelig først fordi man trenger stikkordene for å komme i gang</p> <p>først tok jeg bare på "view file", men da får man ikke noe forklaring på begreper og sånn da, da må man på den siden hvor man har alle forsøkene (resultatsiden?)</p> <p>der får man kommet seg rundt (om søkerresultatet)</p> <p>ja egentlig, tror bare det tar litt tid til å venne seg til å, for nå synes jeg det fungerer greit, men første gang så skjønnte jeg ikke helt hva det var og sånn..</p>	<p>men etter at jeg fant ut dette pleide jeg bare å skrive ned overskriftene på for eksempel forsøk som han viste frem til oss og så går jeg videre derfra</p>

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
3	<p>jeg synes det var litt vanskelig, for jeg var innom en dag og da var jeg bare innom en liten stund og slet jeg litt med hvordan man skulle finne de rette tingene og slet også litt med hvilke linker jeg skulle gå inn på</p> <p>men så var jeg inne forleden dag og da brukte jeg litt mer tid på søke litt og så fikk vi jo ut alle nøkkelordene og da gikk det jo ann å bare gå inn på presentasjonen og se på de, så da plutselig skjønnte jeg at det ikke var så vanskelig allikevel</p> <p>vi hadde fått utdelt den der med søking og sånn, men når jeg søkte så kom det så veldig mye opp og når jeg gikk inn på tingene så fant jeg ikke helt ut hvordan man skulle hindre at man gikk i sirkel</p>	<p>egentlig kunne man ha oppe første siden og gå inn på hver av de linkene, da var det litt lettere</p>
4	<p>jeg synes det var litt vanskelig først fordi jeg forventet kanskje at det skulle være til den og den forelesningen da. Sånn at jeg bare direkte kunne finne det, så jeg ble litt forvirret da at jeg måtte søke etter ord og sånn, men etter hvert så gikk jo det greit også da.</p>	
5	<p>spesielt diskusjonsforumet, at når man går inn på en av postene så mister du knappen til resten når man kommer ut igjen</p> <p>brukte veldig mye tid på å finne ut hvordan jeg skulle bruke det, hvordan jeg skulle få en fullstendig oversikt over en forelesningen</p>	
6	<p>første gangen tror jeg det var før dere var på forelesning, da visste jeg ikke at jeg måtte logge meg inn engang, så jeg satt der med den home-pagen og skjønnte ingen ting.</p>	<p>Men etter at dere forklarte det så fikk jeg ordnet meg passord og sånt da og logget meg inn.</p>
7	<p>første gangen var det ganske vanskelig, fordi jeg ikke hadde power point på maskinen, så da skjønnte jeg ingen ting</p>	
8	<p>du må egentlig vite hva du leter etter</p> <p>jeg kom egentlig ikke skikkelig i gang før jeg fikk nøkkelordene i forumet</p> <p>det er vanskelig å vite hvor man skal gå, det er greit nok å søke, men hva skal man søke på når man ikke veit hva som ligger der</p>	

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
9		Nå hadde jo jeg sett det på forelesning hvordan det skulle gjøres så det gikk egentlig ganske greit. Det var veldig lett å finne frem liksom med de oppe også (peker på menyen)

Different functions and other usability issues:

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
1	<p>Discussion forum:</p> <p>Ja for så vidt, men problemet er som med alle andre sånne diskusjonsforum at hvis det skal ha noen nytte verdi så må det brukes, og det er en ganske høy terskel å få folk til å bruke det. Så er det jo det at det å bruke det betyr jo også at du må bruke tid på det, og da må du prioritere. Skal du bruke tiden på å sitte foran pc`n å skrive inn eller skal du bruke tiden på å snakke med disse menneskene hvis du kan det. Og sånn som for oss som går her så kan vi snakke sammen, som oftest da. Vi har muligheten til det. Så sånn sett så blir det litt sånn kanskje ikke så verdifullt å kjøre diskusjoner på en pc.</p> <p>Search:</p> <p>Det jeg savner der, for eksempel, det er og ha flere sånne keyword felter hvor du kan kombinere mer med og eller eller sant. Sånn som vi har i bibsys og psychinfo og de her. For det er veldig nyttig. I alle fall når du får resultatsider på mange titusener av treff og sånn.</p> <p>Printing:</p> <p>Så når du da har lastet ned den presentasjonen og tar utskrift av den så får du ikke med akkurat det begrepet kanskje. Så det er det snakk om kanskje i hvilken rekkefølge skal ting komme når du skal lese dette også. For det må være, det er litt viktig for oss at ting kommer i en naturlig, korrekt rekkefølge. Når du leser ting, hvis du tar en utskrift, sånn at Det kan jo kanskje være en utfordring å få det til sånn at hvis du tar en utskrift så er det som du får ut da like naturlig presentert som det du får på skjermen når du driver å klikker frem og tilbake.</p>	<p>Search:</p> <p>I: Og du fant det du lette etter? 1: Ja, det gjorde jeg.</p>

<i>Subject</i>	<i>Negative</i>	<i>Positive</i>
3	<p>Printing: det som er ulempen er at jeg sliter med å få det ut ... med å finne ut rekkefølgen i det når du skal ta det ene eller andre</p>	<p>Search: jeg synes enkelt egentlig er greiest for da er det få ting å forholde seg til, da dukker det opp det du trenge</p>
4		<p>Search: I: Synes du søkeresultatet var oversiktlig – enkelt å forstå? 4: ja synes det</p> <p>I: Fikk du de forventede resultatene? 4: ja det gjorde jeg</p>
7		<p>Var søkeresultatet oversiktlig – enkelt å forstå? ja</p>
8	<p>ikke noen problemer med selve linkene, jeg sleit litt med å bruke det i opera i begynnelsen, jeg fant jo ut at jeg måtte ta på bildefremvisning for å bruke linkene. Men det skreiv jo dere på forumet så da gikk det greit..</p> <p>I: Er det noe du savner i funksjonalitet i forhold til andre programmer du har brukt? 8: at man kan klikke seg fram til det også, ikke bare søke</p>	
9	<p>Printing Vet ikke, jeg tenker litt sånn, jeg har ikke prøvd å skrive ut noe av det her enda, men når du skal skrive ut sånn at du liksom får en sammenheng, at det blir en sammenheng i det du skriver ut. Hvis man da liksom kunne få filen med de "key terms" så hadde jo det vært bra. Selv om det kan jo kanskje bli litt mye, vet ikke helt.</p>	

2. Evalaluation

Navigation:

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
<i>11</i>		Eh.. jeg brukte litt... du må på en måte få frem et annet skjema i hjernen for jeg bruker den der ...
<i>12</i>		<p>Ja, når jeg skulle skrive notater var det vanskelig å se om jeg var ferdig med det som ble gått gjennom på en forelesning.</p> <p>Ville gjerne hatt det samla etter forelesning fra begynnelse til slutt.</p> <p>skulle vært mer delt inn i blokker eller temaer.</p>
<i>13</i>		<ul style="list-style-type: none"> - Det var bare jeg som ikke skjønnte at jeg kunne åpne de i ett nytt vindu. (ppt-presentasjonene). Jeg har gått på Rolf Reber noen ganger og fått den her (viser oss ppt-presentasjonen). (Ser på siden – er inne på informasjon for et nøkkelord) Jeg har egentlig ikke sett på det. Men ok det er en presentasjon av et emne og så er det relevante eksperimenter til det ja. (ser gjennom listen) Men det her er jo ikke et eksperiment er det det? (åpner en presentasjon) Det her er en teori. Hva slags system er det her. Er den bare feilplassert eller? : Det er absolutt relevant for «emotions», men det er kanskje ikke et eksperiment, og «james lange teorien» er i alle fall ikke det (en annen på listen). ... - Ehhm .. det tok litt tid før jeg skjønnte at du måtte søke, eller før jeg slo meg til ro med at jeg måtte søke for å finne noe. ... - Derfor så ville jeg foretrekke å hatt det sånn mer som hierakrisk tre eller sånn derre at det stod øverst Rolf Rebers forelesninger og så nedover med alt han hadde brukt i de forelesningene. Det hadde vært nyttig. Og så når det er en sånn database med eksperimenter, det hadde vært kjempenyttig å all verdens psykologiske eksperimenter presentert som PowerPoint, for da når jeg hadde en artikkel foran meg så kunne jeg bare gå til POSbase så kunne jeg få den pedagogiske versjonen der. For de er forferdelig tunge å lese de her artiklene.

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
14	<p>Linkene i søkeres: Var det forståelig hva det var?</p> <p>14: ehh .. ja, du tenker får jeg går videre til ppt-presentasjonen?</p> <p>I: ja</p> <p>14: Ja, det skjønte jeg.</p> <p>Det gikk greit det.</p>	

Time and ease to learn the system:

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
	Å komme i gang å bruke POSbase:	
11	Det var helt enkelt, det var selvforklarende.	
12	<ul style="list-style-type: none"> - Greit å komme inn og finne frem - Genialt å se på èn ting, et spesifikt eksperiment 	
13		
14	- Jeg synes, ja det virket enkelt og greit	<ul style="list-style-type: none"> - Men det gikk litt tregt ... - Det var litt irriterende med det at når jeg skal laste ned de PowerPoint presentasjonene så må jeg hver gang velge om jeg skal se det fra ... «open from» jeg må save fila ikke sant?

Different functions and usability issues:

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
	Design/Layout:	
11		Første gang jeg gikk inn så håpet jeg at han hadde lagt ut forelesningene sine der og det har han jo... men de ligger ikke i rekkefølge. Det tok litt tid før jeg forstod hvordan de fungerte i forhold til forelesningene, men de fungerer jo.. du finner jo tilbake til det han har vist på skjermen, men det tok litt tid før jeg skjønte hvordan han hadde gjort det.
12	Veldig greit, oversiktlig og fint	

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
13	Den er fin.	Det er kanskje ... (surfer litt på sidene, ser på «HOME» -der var det mye tekst) Den er bra den. Logout er litt vanskelig å finne kanskje ...
14	Den er grei den ... ehhh ... jeg har ingen interessante kommentarer til det tror jeg .	
	Åpne/lagre:	
12	åpne greit	klarte ikke lagre
14	hmmm ... ja, det var i grunnen det.	Synes du var lett å åpne eller lagre, eller prøvde du å åpne eller lagre? 14: Ja, som sagt så synes jeg det var litt tungvint. Å åpne fra det område.
	Søk	
11		Ja, og det at du måtte søke på ord og ikke på tittelen på forelesningene. Det kan du ikke. Noen titler på forelesninger er ikke der i det hele tatt altså, jeg gikk glipp av en forelesning forrige uke. Forelesningen het Consept og referansen var «Mellon» eller «Medin» eller noe sånt. Ingen av de to kom opp som keywords eller noe sånt, så da vet jeg ikke hva de har gjort på forelesningen og da greier jeg heller ikke å finne frem til hva han har presentert. Kan selvfølgelig spørre de i klassen, men jeg greide det ikke på bakgrunn av POSbase, men jeg prøvde!
12		skulle finne language, som var ett tema for en forelesning. Da fikk jeg ikke noe søkeresultatet. Visste ikke helt hva jeg skulle søke etter.
13		Nei, ... , skal vi se. Hvis jeg da skal ha ... (viser oss et eksempel søk på skjermen, skriver inn to ord med «&» mellom) noe sånt ville jeg søkt på for det er et tema vi hadde. Og så får jeg ikke noe resultatet. (viser igjen, forklarer at det ikke er lagt opp til bruk av flere søkekriterier enda. Prøver en gang til med ett ord og får opp en liste). Og så ville jeg lure på hvor i all verden er det. Så ville jeg tenkt kanskje det er her (går inn på en presentasjon), men jeg vil måtte sjekke liksom (går gjennom en presentasjon) ... Siden det er så tilfeldig hva som vil ligge i denne databasen så vil ikke søkefunksjonen ikke vil være fullstendig og da er det viktig at det er skreddersydd for ett kurs sånn som Rolf Reber sitt.

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
14		14: Jeg tror kanskje jeg hadde noen start problemer med søking. Prøvde å finne et tema som jeg fikk for mange treff eller ingen treff i det hele tatt.
	Diskusjonsforum	
14	ehh ... nei, det mest interessante for meg var kanskje det å kunne diskutere.	
	Printing	
12		vanskelig å skrive ut en forelesning

User satisfaction

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
	Det beste med POSbase:	
11	At man kan finne ut hva instituttet regner som viktig, uten å gå på forelesningene. Uff da, det var nok det ... I: Pleier du å være med på forelesningene sånn generelt? 11: Ca halvparten	
12	greit å ha et sted å få forelesningsnotater	
13	Det beste ... hm ... at det er PowerPoint presentasjoner av ... ting som er relevant for kurset. Det er det beste.	Det er en del andre som har brukt det og, vi har en som lagde en del presentasjoner og la det i en mappe på studentportalen på min side, og de og var nyttige på samme måten. Men da var det litt enklere å vite hva som var relevant for kurset, for der lå jo alt som var knyttet til kurset. Så det er litt vanskeligere å finne hva som er relevant her da.
	Det dårligste med POSbase:	
11		mmm ... Jeg lurte på ... Enten så prøvde jeg å bruke det til noe som det ikke er beregnet på, eller så ligger det veldig lite informasjon inne, for jeg fikk veldig ofte «no hits».
13		Ja, det at det er vanskelig å vite hva som er relevant.
14		ehhh ... ja, det jeg tok opp istad, det med at det gikk tregt.
	Problemer/Ønskede endringer:	

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
11		Ja, det som du snakket om, den listen over ting som ligger i POSbase som har vært på forelesning eller som skal komme på forelesningene. Det hadde vært veldig praktisk.
12		Det var det jeg sa i sted, det med blokker og temaer.
13		Sånn som jeg har brukt POSbase nå ... en ting er hvis POSbase blir en stor database med all verdens eksperimenter ... for da kan jeg godt bruke det uten å ha noe å støtte meg til ... da kan jeg gå å søke å se om det er der ... på lykke og fromme. Men hvis det er knyttet til et kurs , så trenger vi den der oversikten som vi har snakket om.
14		Det hadde jo kanskje vært bra hvis, sånn som det var på forelesningene til Reber, det hadde vært bedre hvis hele skjermen var fylt med den PowerPoint presentasjonen. I steden for at vi driver og ser på det gjennom Windows. I: Slide Show? 14: Ja, slide show ja. Men det blir jo mer på Reber sine forelesninger da. Det er vel noe vi kan gjøre ...

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
	POSbase i kombinasjon med forelesninger:	
11	Veldig greit. Det var veldig lett å finne ... når man går på begge så finner man det greit I: Hva slags utbytte hadde du av det? 11: Det er vel mest at du ... når du går inn på forelesningen og vet hva han har tenkt å snakke om så er det lettere å følge med. ... Jeg ser også for meg at det vil være veldig nyttig når vi skal repetere til eksamen.	
12	Greit	

<i>Subjekter</i>	<i>Positivt</i>	<i>Negativt</i>
13	mmm ... litt bra	men litt vanskelig å knytte til forelesningene på grunn av det som jeg har sagt tidligere
14	Nei, det synes jeg fungerte greit I: Ser du noen fordeler eller ulemper med å bruke IKT i forelesningene? 14: Nei, det er vel bare en fordel at han kan tilpasse seg spørsmål som vi eventuelt kommer med i forelesningene.	Det ble kanskje ... ble litt uvant ... siden det virket som om det ble så spontant. ... I: Tenker du under forelesningene da? 14: ja, under forelesningene ja. For sammenliknet med forelesningene til Mark Price, han hadde veldig sånn strikte forelesninger. Veldig godt planlagt på forhånd da, akkurat hvilke PowerPoint presentasjoner han skulle gå gjennom. Mens Reber sine forelesninger var litt friere lagt opp.
	Faglig nytte:	
11		ikke enda ... (latter) ... også var det jo ingenting på «consciousness», da kunne jeg svart ja.
12	Ja, deilig å ikke måtte notere alt	
13	Ja, når jeg fant det som jeg lette etter.	
14	ja, jeg fikk jo fort oversikt over forskjellige eksperimenter og sånt.	
	Innhold:	
11	Det var veldig grundig, men siden ... PowerPoint er jo veldig lett å lese i forhold til sånne PDF'er ... de PDF'ene som biologisk psykologi legger ut, de får du jo ikke forståelse eller, sant det kan være tungt ... PowerPoint er veldig oversiktlig. Det er veldig fort å scrolle med øynene nedover til du finner det du vil ha.	
12	bra	
13	Det synes jeg var bra. Men det er jo folk som kan mer enn meg som har lagd det så.	
14	Det virket bra nok.	: Det er jo litt ... det er veldig kort. Det er nesten tynt, men det holder det.

Appendix F

Observations

Observasjoner første evaluering:

Subjekt 5 (grunnfag)

Først får Subjekt 5 en oppgave i å finne frem til to presentasjoner og et nøkkelord. Hun finner lett frem til presentasjonene, men har vansker med å finne frem til nøkkelordene. P.g.a. dette prøver hun derfor avansert søk, og fyller inn "keyword" der. Vi må forklare henne hvordan hun skal finne frem til det da hun i løpet av noen minutter ikke ser ut til at hun klarer det selv...

B: Synes du det er tungvint å finne frem til nøkkelordene på denne måten?

- jeg har ikke leitet etter dem sånn før
- det tar litt tid av å finne ut av oppsettet her også, men sånn er det jo med det meste

Hun forteller oss også at hun ikke skal ta eksamen, da hun har valgt dette som særemnet sitt i sin hovedoppgave på humanistisk informatikk

Subjekt 6 (grunnfag)

Først får Subjekt 6 en oppgave hvor hun skal finne frem til to eksperimenter og ett nøkkelord. Hun brukte avansert søk, hvor hun fyllte inn tittel på eksperimentet og keyword. Hun sier hun pleier å bruke avansert søk. Hun fant enkelt frem til selve eksperimentene, men når hun skulle finne frem til nøkkelordet var hun mer usikker. Hun sa hun bare pleide å skrive inn et ord og så åpne og se på disse. Hun gikk ikke direkte til dette selv.

Subjekt 7 (grunnfag)

Subjekt 7 får først en oppgave hvor hun skal finne frem til to presentasjoner og et nøkkelord. Hun finner enkelt frem til presentasjonen og bruker bare deler av tittelen for å finne den. Når det gjelder nøkkelordet får hun problemer, hun prøver å gå inn på forumet for å finne nøkkelordet, men skjønnte ikke at man kunne finne dem i selve databasen. Hun svarer at hun ikke vet når jeg spør hvordan hun vil finne de i databasen. Jeg viser henne hvor hun kan finne det i eksperimentet. Når jeg spør om hun har gjort dette tidligere, sier hun at hun ikke hadde tenkt over at man fant nøkkelordene der i resultatet før.

Subjekt 8 (grunnfag)

Først får Subjekt 8 en oppgave i å finne frem til to presentasjoner og ett nøkkelord. Han bruker avansert søk hvor han fyller inn tittel og author og bruker view file for å se på presentasjonene. Når han skulle finne nøkkelordene kom det frem et stort antall titler som han begynte å søke i ved hjelp av pc'en i tillegg. Han hadde hatt problemer med å finne frem til nøkkelordet. Jeg forklarer hvor han kan finne frem til nøkkelordene. Han forklarer at han bare har søkt på titlene tidligere.

Subjekt 9 (embet)

Få informanten til å finne et par eksperimenter og nøkkelord som vi hadde skrevet opp. Fant greit eksperimentene. Brukte enkelt søk. Hadde sett det online på forelesning. Gikk rett inn på View File, men visste og om andre muligheten, klikke på tittelen og finne informasjonen.

Skulle også finne nøkkelordet ”cognition”. Problemer med å finne det. Kom opp veldig mange resultat på dette søkrekriteriet. Skjønte ikke at nøkkelordet lå under eksperimentet. Var litt forvirret ang. dette.

I: Og hvis du skulle prøve å finne nøkkelordene?

9: Bare cognition?

I: Ja

9: Ja, det prøvde eg faktisk på før en gang, og da kom det opp veldig mye rart. Så kanskje du skal gjøre det her kanskje (peker på søk)

Skriver inn cognition og søker, ser på søkerresultatet, men skjønner ikke hvor cognition er. Måtte vise hvordan det funket.

Subject 10 (embet)

Først hvordan bruke POSbase, skulle finne noen eksperimenter.

Hun hadde ikke brukt POSbase til å finne eksperimenter, nøkkelord etc. Hadde bare brukt diskusjonsforumet, trodde bare det var stikkord som lå i databasen... Trodde derfor ikke det var noe nyttig. Hadde søkt på forskjellige navn fra universitet, fant ingen ting... Søkte på andre navn enn Rolf Reber.

Om hun hadde prøvd å søke før, bare etter forfatter.

Viste hun litt rundt på siden, søk(enkelt og avansert), hjelp...

Spurte om kriteriet field, prøvde å søke på et felt, Hadde gjort det før, husket det når vi gjorde det.

Observasjoner andre evaluering:

Subjekt 11 (embet)

To oppgaver – finne frem til to eksperiment og to nøkkelord. Kandidaten blir oppfordret til å snakke høyt mens hun utfører oppgavene.

11: Først tenkte jeg kanskje advanced search, men men den går antageligvis på titler, på referansene. Hvis du vil finne et eksperiment tror jeg du kan velge i kategori i et experiment.

(Velger Enkelt søk.)

11: Da tror jeg at «response scales» er et bra søkeord. Så vet jeg ikke om han greier mer enn ett ord i søket, har bare prøvd ett og ett ord før. Ja, det greide han. Når det gjelder «Mood as information», det var jo et eksperiment, så vet jeg jo at den greier flere, så da prøver jeg mood og information. Nei, da kom det ingenting. Da prøver jeg bare mood eller bare information.

Da kom det frem. Forklarer hvorfor ikke mood og information ikke kunne brukes da vi ikke har støtte for OR og AND.

11: Så var det keywords. Ja, 24 på «memory» og 3 på «availability»

Hun bruker enkelt søk og nøkkelord som kategori. Forklarer at man kan finne frem til et nøkkelord som heter availability og memory. Dette visste hun.

Subjekt 12 (embet)

Hun brukte enkelt søk for å finne eksperimentene. Valgte “experiment” som kategori og skrev hele tittelen, fikk ingen treff, prøvde igjen med bare ett ord og fant det. Skyldes mest sannsynlig en skrivefeil i tittelen. Trodde hun skrev “interpertation” i stedet for “interpretation”.

Andre eksperiment fant hun med en gang. Søkte på samme måten, men skrev bare inn “mood” som var ett av ordene i tittelen.

Når hun skulle finne nøkkelorden valgte hun “keyword” som kategori, og skrev nøkkelordet som tekst. Kom en del resultater,

12: dette er alt som gjelder “memory” (peker på skjermen). (vi viste at hun måtte bla for å komme til nøkkelordet som het “memory”.

Subjekt 13 (embet)

Spør om han kan vise oss hvordan han bruker systemet, og om han vil prøve å tenkte høyt mens han gjør det.

13: Jeg har ikke brukt det så veldig mye.

I: Det gjør ikke noe.

13: Starter gjerne først med å lure litt på hva det er jeg skal gjøre.

Viser oppgavene som vi har skrevet ned.

13: Men nå er jeg logget på ja, så da er ikke det noe problem. Når man vet hva man skal ha så er det ikke så er det ikke så vanskelig å finne det

Søker på «experiment» (i enkelt søk), så «information»

Får opp ett søkeresultat, og finner fort det aktuelle resultatet.

11: Så klikker eg på noe som er blått (går inn på info-siden). Så kan jeg se den herre presentasjonen, skal vi se (leter litt etter riktig PowerPoint fil) Finner den, åpner og går gjennom presentasjonen.

11: Men så hvis jeg lurar på hva f.eks. «Mood congruence», det er vel et «keyword» så kan jeg gå inn der, men hvis jeg nå finner enda et «keyword» inni der igjen, eller et annet eksperiment. Hvis jeg da går videre så kommer det opp i samme vinduet, så hvis jeg vil ha den oppe, og fortsette der jeg var i den første, da mister jeg det.

Forklarer at han kan høyre-klikke og velge «åpne i nytt vindu».

I: Hvis du skulle finne et nøkkelord (peker på neste oppgave)?

Velger «keyword» som kategori, skriver «memory» og søker. Får opp ganske mange treff, blir litt forvirret:

11: Da har vi, hm, ... mange ting som har «memory» som nøkkelord. Men jeg vet ikke helt, er der da «cognition and memory» (peker på «cognition»)

Forklarer at listen er alfabetisk og at nøkkelordet «memory» kan han finne ved å gå til neste side.

Forklarer også litt om strukturen, at hvert nøkkelord igjen er tilknyttet andre nøkkelord. Og at det er derfor søkeresultatet blir såpass omfattende. Skjønte ikke helt hvorfor presentasjonen av «memory» kom sammen med så mye annet. Han prøver å søke på et helt vanlig engelsk ord, prøver med «the». Tror at søket foregår i teksten. Forklarer og litt at det ikke er «content-search», men definerte nøkkelord/tekstfelt.

Subjekt 14(embet)

Spør om han vil vise oss litt hvordan han bruker det, og prøve å tenke litt høyt. Sier at han automatisk ville gått inn på forumet. Vi viser han oppgavene som vi har skrevet på et ark.

Velger enkelt søk og «all categories». Skriver inne hele tittelen på eksperimentet og finner det aktuelle med en gang. Gjør samme med neste eksperiment. (blir avbrutt av en studentkollega...)

Nøkkelord:

Gjør akkurat det samme. Skriver inn «memory» og får opp veldig mange resultat. Går derfor på avansert søk. Hukker ikke av for å inkludere nøkkelord i resultatet. Litt forvirret angående dette. Viser at han må hukke av nederst på siden. Søker på tittel. Må vise at det ligger alfabetisk og han må gå på «next page» et par ganger.

Samme med «availability»

Blir litt forvirret fordi det er både et eksperiment og et nøkkelord som heter «availability». Går derfor først inn på eksperimentet. Må forklare at det er to og forskjellen.

Appendix G:
Postings from the Discussion Forum

Autumn 2003

For de med Opera/Netscape

Author: Gitte (---.vpn.uib.no)
Date: 10-23-03 14:29

Hei,

Det det viser seg at det kun er Internet Explorer som viser PowerPoint-filene i nettleseren, mens Opera og Netscape bruker PowerPoint-programmet som ligger på den lokale maskinen.

For at dere med Opera eller Netscape skal kunne trykke på linkene inne i presentasjonene må dere derfor vise presentasjonene som "bildeframvisning" / "slideshow". Dette gjøres enkelt ved å trykke på knappen nederst til venstre eller velge "Lysbildefremvisning" øverst på menyen og deretter "Vis fremvisning". For å kunne avslutte en fremvisning må man enten trykke seg igjennom alle slidene eller høyreklikke med musen og velge "Avslutt fremvisning".

Håper dette var til hjelp.

Forelesningsnotater...

Author: xx (129.177.202.---)
Date: 10-17-03 11:02

Er det meg som er dum eller er det andre som også sliter med å finne forelesningsnotater sånn at man kan skrive dem ut før forelesning? Hvis noen har noen gode tips til hvordan dette gjøres så mottas de med takk...

Re: Forelesningsnotater...

Author: lekturer (129.177.86.---)
Date: 10-17-03 12:50

Nei, du er ikke dumt, men du spør om noen som er berettiget. Jeg har kopiert forelesningsnotater til den følgende forelesninger her (med unntak av den siste forelesning i to uker). Jeg har også inkludert den første forelesning. Du kan finne alt på <http://nattergal.ifi.uib.no/posbase>

For the lecture on perception (First lecture in cognitive Psychology, PSYK103; Oct. 15):

Presentations:

Word-superiority effect (Reicher, 1969)
Ambiguous words in context

Keywords:

Bottom-up processing
Cognition
Form Perception
Object recognition
Object identification
Perception
Tachistoscope
Top-down processing

For the lecture on memory and knowledge (Second lecture in cognitive Psychology, PSYK103; Oct. 17):

Presentations:

The Forgetting Curve (Ebbinghaus, 1885)
Sensory Memory (Sperling, 1960)
Does short-term memory exist? (Postman & Phillips, 1965)
Organization of Semantic Memory (Collins & Quillian, 1969)
State-dependent memory under alcohol (Goodwin et al., 1969)
Context-dependent memory (Godden & Baddeley, 1975)
Context-dependent memory (Smith et al., 1978)
The network model of emotions (Bower, 1981)

Keywords:

Cognition
Context-dependent memory
Episodic Memory
Forgetting
Interference (memory)
Long-term memory
Memory
Proactive Interference (Memory)
Retrieval
Retroactive Interference (Memory)
Semantic memory
State-dependent memory
Trace decay (memory)

For the lecture on implicit memory (Third lecture in cognitive Psychology, PSYK103; Oct. 22):

Presentations:

The Handshake of Doctor Claparède (Claparède, 1911)
Explicit and Implicit Memory: Retention Interval (Tulving et al., 1982)
Repeated Exposure and Time Perception (Witherspoon & Allan, 1985)
The False-Fame Effect (Jacoby et al., 1989)
Unintended Plagiarism (Marsh et al., 1997)
False Truth Hasher et al. (1977)
False Truth (Brown & Nix, 1996)
Perceptual Fluency and Judged Truth (Reber & Schwarz, 1999)

Keywords:

Cued recall
Cued recall Example
Direct memory tasks
Free recall
Indirect memory tasks
Long-term memory
Memory
Recognition
Recognition Example
Word-fragment completion

For the lecture on categorization (Fourth lecture in cognitive Psychology, PSYK103; Oct. 24):

Presentations:

Organization of Semantic Memory (Collins & Quillian, 1969)
Family Resemblance (Wittgenstein, 1953)
Classification in context (Taylor et al., 1978)
Exemplar versus abstractionist views of categorization (Barsalou, 1990)
Causal mechanisms versus similarity (Gelman & Markman, 1986)
Ad hoc Categories (Barsalou, 1983)

Keywords:

Categorization
Category
Cognition
Defining features
Exemplar
Probabilistic view
Prototype
Representation
Similarity

Re: Forelesningsnotater...

Author: lecturer (129.177.86.---)

Date: 10-29-03 19:13

For the lecture on judgment (Fifth lecture in cognitive Psychology, PSYK103; Oct. 29):

Presentations:

Misconceptions of chance (Kahneman & Tversky, 1972)
Insensitivity to sample size (Kahneman & Tversky, 1972)
Misconceptions of regression (Kahneman & Tversky, 1973)

Availability: Ease of amount of recall? (Schwarz et al., 1991)
Availability (Tversky & Kahneman, 1973)
Anchoring and Adjustment (Tversky & Kahneman, 1974)
Insensitivity to sample size (Tversky & Kahneman, 1974)

Keywords:

Anchoring and adjustment
Availability
Cognition
Heuristics
Judgment
Representativeness

Here the presentations for the last lecture:

For the lecture on categorization (Sixth lecture in cognitive Psychology, PSYK103; Oct. 31):

Presentations:

The Candle Problem (Duncker, 1945)
The Two-Ropes Problem (Maier, 1931)
The Nine-dot Problem (Scheerer, 1963)
The Triangle Problem (Anon)
Wason's Selection Task (Wason, 1966)
A variation in Wason's Selection Task (Griggs & Cox, 1982)
A rational argument in favor of belief in God (Pascal, 1678)
Intuitive Judgments (Bowers et al., 1990)

Keywords:

Deductive reasoning
Functional fixedness
Insight
Modus ponens
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Problem solving

Machiavellianism

Author: M (---.dialup.online.no)

Date: 10-23-03 12:57

Hva betyr Machiavellianism?

Re: Machiavellianism

Author: P (---.dd.nextgentel.com) Date: 10-28-03 16:22

Niccolo Machiavelli (1469 - 1527) skrev "Fyrsten" og "Livius kommentaren". Her diskuterer han årsakene til oppgang og nedgang i politikken og midler til å holde på makten. I "Fyrsten" legger han for dagen en positiv innstilling til det eneveldige kongedømme, og i "Livius kommentaren" taler han for en republikans forfatning. Uansett: det som teller er de politiske resultatene. Machiavellis mål er å skape en stabil stat. Midlene blir mindre viktige. Han forutsetter at mennesket er egoistisk, det finnes nesten ingen grenser for menneskets streben etter makt og materiell rikdom. Når ressursene er knappe må det derfor bli strid. Da er det nødvendig med en sterk statsmakt til å etablere stabilitet og trygghet. Det politiske målet i flg Machiavelli er ikke det gode liv, trygghet for innbyggerne, velferd og fremgang, men å FÅ makten, og etterpå å BEHOLDE den. Slik sikres stabiliteten. Og midlene som er akseptable for å FÅ og BEHOLDE, vel de er det ikke så nøye med. Dvs, det er nøye, fordi alle midler som anses nødvendige for å oppnå målet, er legitime. Alt annet enn makten er middel, inkl moral og religion. Det er herskeren som definerer moralen (religionen er jo definert fra Gud, men kan godt benyttes som middel). Så Machiavellianisme blir dermed et slags idegrunnlag som kan sammenfattes i maximet: målet helliger middelet.

Re: Machiavellianism

Author: C (---.psych.uib.no)

Date: 10-30-03 10:05

vil i så henseende henlede oppmerksomheten til hvordan den kristne kirke er bygget opp. ikke så mye for å fremelske denne type mål-middel tenkning men for å påpeke at machiavelli beskriver mekanismer ved menneskelig natur som finnes igjen i en analyse av kultur fenomener. det er i utgangspunktet pers utsang (religionen er definert fra gud, men kan godt benyttes som middel) som er interessant å ta tak i her. jeg mener dette er meget korrekt observert. religionen slik den presenteres som guds konstruksjon (at der finnes en gud som noen gang har presentert denne meningskonstruksjonen er jeg i aller høyeste grad kritisk til, men det er ikke poenget her) kan ikke i seg selv sies å være et middel, den skal være en idé om en slags tenkt naturlig morallov som fører til det beste for mennesket som helhetlig populasjon. At det likevel kan observeres at mange, ikke minst kirken selv, anvender religionens tankegods til å posisjonere seg i en kultur, viser tydelig hvordan enkelte fenomener beveger seg fra å være frie moral-ideer (om noe noen gang kan tenkes å være en fri idé, det er kun et teoretisk grep) til å bli instrumentelle fenomener i en mål-middel relasjon. Det er denne overgangen som er interessant, for den sier noe om mennesket som individ og gruppe. og det er dette Machiavelli også pessimisk beskriver (og anerkjenner som nødvendig, det er vel grunnet i tvilsomme verdier, menneskesyn på hans tid og arroganse?).

Bibelen sier i en passasje i det nye testamentet noe om dette. Jesus er på en desperat vandring i en eller annen ørken (jeg husker ikke helt detaljene her), og i sin fortvilelse over ikke å nå ut til menneskene han er satt til å befri blir han besøkt av djevelen som tilbyr Jesus tre ting (som jeg heller ikke husker detaljert), noe slikt som mat nok til å mette alle, og to andre ting som ville gjøre Jesus til en meget anerkjent mann som ville lettere (garantert) nå frem til sitt folk med sitt budskap. Jesus, som de facto er gud og ikke mennesket, klarer i denne fristelsen å motstå den enkle vei, da dette ville gjøre at idéen som han skal føre til folket (den idéelle kristendomsforståelsen) vil bli omgjort til et maktinstrument og således miste sin viktigste egenskap, friheten i forhold til seg selv. Dersom mennesket velger kristendommen pga dens posisjon i en maktrelasjon vil den i bunn og grunn ikke være verdt en skitt. So much for the ideal. Jesus klarte det, men måtte bøte med livet.

og med han den rene kristendommen, troen som er en fallitt, fordi den tar etter dette del i en maktrelasjon i guds fravær: dostojevskij beskriver dette godt i sin passasje "storinkvisitoren" i boka "brødrene karamasov". Han viser her hvordan kirken, som jesus gav ordre om å bygge like før sin død, helt fra sin begynnelse har tatt til seg de fristelser som djevelene bydde jesus for å posisjonere seg i samfunnet. Det er ikke vanskelig å se hvordan dette skjer daglig den dag i dag, enda sekuleringen av samfunnet har kommet langt på vei, kirken er av de store maktinstitusjoner i vår kulturhistorie. Og hvorfor: fordi mennesket ikke er gud, fordi gud er inget mer enn en ideell tanke delt og produsert av en rekke tenkere gjennom vår historie. Mennesket kan ikke la være å la sin mening ta del i mål-middel relasjoner. Dostojevskij lar det gå langt: i et tenkt scenario lar han jesus atter komme tilbake til jorden som lovet, jorden av i dag (atter en konge). Hva har således skjedd? Siden kristendommen har blitt transformert til et middel er denne blitt ødelagt som idé, og makten ligger hos mennesket som besitter religionen som middel. Disse menneskene er seg selvsagt det ansvar som ligger i makten bevisst og velger å drepe Jesus i den spede begynnelse, for å beholde maktrelasjonen. Symbolsk genialt i forhold til drapet som har skjedd på idéalen, og herlig realistisk i forhold til mennesketenkning.

Hvorfor alt dette pratet om religion og Jesus. Det er i utgangspunktet uten direkte tilknytning til Machiavelli men viser til de grader de mekanismer han presenterer i sitt totalitære svar/hvitt syn. Når kirken som skal bygges ideell blir en sentral aktør i mål-middel pragmatisme, kan en da forvente at mer sekulert basert institusjoner i kulturen kan fungere noe bedre. Vel vel.

C

Cognition and Emotion

Author: [Lecturer](#) (---.vpn.uib.no)

Date: 10-14-03 16:03

Can we think without feeling any emotional tone? Or is an emotion behind each mental process? Is thinking necessary for feeling an emotion? Or is it possible to feel emotions that are not mediated by any cognitive processes?

Please write about the relationship between cognition and emotion, and provide arguments for your position!

Re: Cognition and Emotion

Author: M (---.dialup.online.no)

Date: 10-31-03 08:43

Møter jeg på en slange oppstår det en emosjon, men kognisjon dukker ikke opp før jeg har løpt av gårde. Emosjon før kognisjon.

Man kan våkne glad eller trist uten å ha hatt en bevisst kognitiv vurdering av nattens kognitive aktivitet. Freud hvor er du?

Eller man kan kognitivt vurdere hvor farlig det er å ta seg en røyk. Hvis man vurderer det som farlig, ja da oppstår en emosjon i fht røyken. Kognisjon før emosjon.

Re: Cognition and Emotion

Author: S (---.ub.uib.no)

Date: 11-04-03 12:09

Jeg tror at emosjoner er involvert i det meste av bevisst tenkning, men at man kan handle ubevisst uten emosjoner og at man kan føle seg trist, glad osv uten å nødvendigvis vite hvorfor man føler seg slik.

Dette baserer jeg bla på LeDoux som viste at thalamus sender sanseinformasjon to forskjellige veier samtidig, selv om de begge ender opp i amygdala. den ene "ruten" går fra thalamus opp til cortex, hvor informasjon bli behandlet (kognisjon), før den blir sendt videre til amygdala, hvor en emosjonell respons genereres. Dette er ifølge LeDoux det som vanligvis skjer. men thalamus kan også sende informasjon rett til amygdala uten å gå om cortex. dette tar kortere tid og gjør oss i stand til å reagere kjapt for å unngå fare.

Nå er dette er nervologisk basert forklaringsmodell, men jeg mener det kan overføres til kognitiv psykologi også, strengt tatt så er jo biologisk og kognitiv psykologi på mange måter to sider av samme sak, man prøver å forklare de sammen fenomenene, men på forskjellige måter...

Så utfra denne modellen vil jeg si at mennesket både er i stand til å ha emosjoner uten å være bevisst hvorfor man har dem. Jeg ser også for meg at dette er en adaptiv egenskap hos mennesket. Men man vil ofte bli oppmerksom på årsaken til emojsonen i etterkant

Men jeg tror også at all kognisjon involverer emosjon. Dette tror jeg fordi det virker som om hjernen fungerer som en helhet, og at emosjoner er en integrert del av denne. Dette stemmer også overens med LeDoux sin modell. Der går all informasjon gjennom amygdala som er et hovedsete for å generere emosjoner.

Nå ble det veldig mye, og jeg kom akkurat på at paralellkoplete systemer også kunne blitt brukt i denne sammenhengen, men jeg orker ikke gå inn på det nå.

Jeg mener i alle fall at det er mulig med emosjon uten kognisjon (men som regel med etterfølgende kognisjon), men at kognisjon uten emosjon blir vanskelig...

Re: Cognition and Emotion

Author: C (---.ub.uib.no)
Date: 11-05-03 14:34

at emosjon kommer før, og uavhengig av, kognisjon er vel fastlagt (Øhman, Damasio etc), således kan emosjon komme før kognisjon, og uten kognisjon.

men dette er dersom emosjonen blir definert som en aktivering i emosjonscentra med en tilstøtende fysiologisk respons. Denne definisjonen av emosjon trenger ikke å innebære bevissthet. Nyere emosjonsforskning viser at kroppen er istand til å prosessere frykt underbevisst ved lave stimuli og gjøre fysiologiske reaksjoner utenfor bevisstheten.

når man blander kognisjon inn i dette rammeverket går man over fra å snakke om emosjon til å nærme seg en følelse, slik som begrepene er å forstå. Dette er vel en konsekvens av den hersens nevrovitenskapifiseringen av psykologien.

for å føle en emosjon er kognitive mekanismer inn i bildet, gjenkjenning, attribusjon etc. Følelsen kan være vidt forskjellig, avhengig av mening i kontekst, selv om den kroppslig-emosjonelle responsen er prikk lik. (jeg peser og svetter, der er en slange, jeg må være redd! kontra jeg peser og svetter, der er kjæresten min, jeg må være kåt)

kan gjerne tenke meg en avklaring på hvilke definisjoner man i kognitiv psykologi i Bergen legger til emosjon og følelse.

C

Sove med hodet mot veggen

Author: S (129.177.202.---)
Date: 10-22-03 12:01

Dette har kanskje ikke så mye med kognitiv psykologi å gjøre (og er forsåvidt ikke noe særlig relevant i det hele tatt) , men her om dagen kom jeg til å tenke på at alle jeg vet om sover med hodet inn mot veggen og ikke ut i rommet. Alle "på film sover også slik og alle senger på alle hotellrom jeg har vært på oppfordrer også til å sove med hodet intill veggen... Hvorfor dette mon tro?

Utfra et evolusjonistisk perspektiv kan det virke sannsynlig at det er adaptivt å sove på denne måten, fordi det da er beina og ikke hodet som først kan bli angrepet ved et eventuelt angrep. Og beina er ikke så viktige som hodet for å overleve. Men jeg syns allikevel ikke at dette forklarer hele fenomenet.

Er det noen som vet om det finnes forsøk utført omkring dette eller som eventuelt har noen tanker om det selv?

Re: Sove med hodet mot veggen

Author: L (129.177.131.---)
Date: 11-01-03 14:20

Jeg sover ofte med hodet vekk fra veggen -i hvertfall en del ganger.... Kanskje er jeg litt rar.....

Morsomme tanker du har. Håper du finner svar og får ro i sjelen igjen.

Re: Sove med hodet mot veggen

Author: S (---.ub.uib.no)
Date: 11-04-03 12:11

hmm...kanskje det er jeg som er rar og ikke du...:)

Re: Sove med hodet mot veggen

Author: C (---.ub.uib.no)
Date: 11-05-03 14:25

går ut fra at du mener å sove med hodet i den enden av sengen som står inn mot veggen, altså hodegavlen, og at du ikke snakker om å vende seg mot veggen med nesen, altså dersom sengen står langs en vegg.

isåfall har jeg et forslag: kanskje det er fordi lampen som oftes henger i den enden, fordi det ikke er så lett å henge en lampe i løse luften i den enden som står ut i rommet?

i forhold til evolusjon er vel mennesket (som er de eneste som ligger i seng på denne måten) ikke så ofte angrepet i sengen mens de sover at det vil være en mekanisme som kan være meningsfull i naturlig seleksjon?

ha en fin dag.

C

Re: Sove med hodet mot veggen

Author: S (129.177.202.---)
Date: 11-06-03 13:05

mener med hodet mot hodegavlen ja...

lampen ved siden av min seng står på gulvet, men du kan selvfølgelig ha et poeng. Føler allikevel ikke at det er derfor de fleste\mange(?) sover på denne måten. I og med at mennesket har klart å gå på månen vil jeg anta at hvis det hadde vært mer naturlig for oss å sove med hodet ut i rommet vill vi nok ha klart å konstruere en lampe mekanisme som hadde gjort dette mulig...)

det jeg mente med evolusjonsmessig adaptivt var egentlig at hvis man har fast "grunn" bak hodet mens man sover vil det være vanskelig å angripe bakfra. Men jeg ser absolutt poenget ditt i at folk ikke så ofte blir angrepet i sengen, i alle fall ikke nå til dags. Men kanskje det var viktigere å sove sikkert da grunnlaget for dagens medfødte handlingsmønstre ble lagt...?

Men jeg drar det kanskje litt (veldig?) langt når jeg sier at det er medfødt handlingsmønster hos mennesket å sove med hodet inn mot veggen...I mangel på andre forklaringsmåter heller jeg foreløpig litt mot denne, men jeg har egentlig ikke peiling på hva jeg snakker om...jeg bare lurer...

Jeg vet at jeg har skaper en problemstilling ut av en liten filleting og at jeg forsåvidt ikke har noe empirisk grunnlag for å skrive det jeg skriver. Men jeg synes det er en interessant tanke i alle fall.

S

Re: Sove med hodet mot veggen

Author: C (---.ub.uib.no)
Date: 11-07-03 15:17

ja jeg synes også det er interessant tanke. Jeg lurer bare på om det å ligge med hodet mot solid ground kanskje heller må sees på som kulturelt lært kunnskap enn noe som kan sees på som naturlige fikserte handlingsmønstre. Et eksempel: Vi mennesker har i den siste tiden begynt å kjøre i stor fart i forskjellige fartøyer - og vi har også begynt å bruke sikkerhetsbelter (noe som øker overlevelsedyktigheten). Det er likevel vanskelig å se for seg at dette om lang tid kan han sneket seg inn som en naturgitt handlingsmønster hos mennesket (at vi rett og slett er predisponert fra naturen til å ta på oss sikkerhetsbelte hver gang vi setter oss inn i noe som går fort). Dette blir vel heller overført som kulturell læring. Det som imidlertid kanskje kan sies er at mennesket kan utvikle en bedre risikovurderingsevne i takt med en varierende miljø, og at dette kan ha evolusjonistiske trekk.

C

Re: Sove med hodet mot veggen

Author: N (129.177.87.---)
Date: 11-09-03 19:19

Jeg synes hele denne diskusjonen er vanvittig tåpelige. Hvem har sagt at evolusjonsteorien bare er å godta kanskje? Det er mange som er uenige i den. Menneskenes laden i sengen er for det første strengt hellig, og har ikke noe i et diskusjonsforum som dette å gjøre, men om det nå blir dratt ned på dette nivå kan det lett dras opp igjen og igjenhelliges ved en liten kikk i bibelen. Jeg vil gjerne vise til salmene 97, hele, der det blir beskrevet hvordan guddommelighet favner om mennesket når det sover, og tar over det ansvar som det har for ikke å synde. Vi er Gud når vi sover, dersom vi tror, og vi har ingen rett eller mulighet til å analysere hvorfor Gud gjør som han vil.

Hold dere til våkenpsykologifantasiene deres!

N

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Re: Sove med hodet mot veggen

Author: S (---.ub.uib.no)
Date: 11-14-03 14:07

Hei C!

Syns du kommer med et veldig bra poeng her, og jeg syns at det virker mye mer plausiblet at det er kulturlært enn biologisk betinget (i alle fall når du legger det fram på den måten...hehe) Men er det kulturlært hvis alle gjør det, eller må det da ses på som artstypisk? Nå er det selvfølgelig vanskelig å vite hvordan "alle" sover, så det blir da vanskelig å si noe om dette.

Det hadde også i denne sammenheng vært interessant å få vite hvordan mennesker "lå med hodet" tidligere. Har mennesket "alltid" sovet med hodet mot fast grunn alltid eller er det noe vi har begynt med i senere tid, feks etter at vi lærte å lage senger og hus? Dette er selvfølgelig vanskelig (om mulig i det hele tatt) å få tak slik informasjon. Jeg vet ikke hvor mange arkeologer og historikere som har hatt dette som arbeidsfelt...:)

Hei N!

For det første, er du seriøs? vet ikke helt om du seriøst mener det du skriver eller om du bare driver med gjøn...?

Men jeg vil anta at du er seriøs...

Jeg kan forsåvidt være enig med deg i at denne diskusjonen ikke er veldig viktig. men jeg synes, og tydeligvis Christian også, at det om ikke annet er en interessant tanke.

Jeg er også enig i at det ikke bare er å godta evolusjonsteorien sånn helt uten videre. Men når de fleste vitenskaper har godtatt denne teorien som "sann", noe jeg antar de har gjort på en empirisk grunnlag. Så når denne teorien ligger til grunn for en stor del av forskning innen psykologi og andre fagområder, syns jeg det er ok å gå utfra denne...men hey, du trenger selvfølgelig ikke være enig.

Jeg er fullt klar over at mange religiøse miljøer ikke godtar evolusjonsteorien, men jeg velger i denne sammenhengen å basere meg mer på empiri (og forsåvidt en del spekulasjoner) enn tro...

Hvordan mennesket ligger i sengene sine er for meg ikke hellig, og jeg ser derfor ikke noe galt i å diskutere det i et diskusjonsforum. Hvis du derimot ser på det som upassende så er det greit for meg. Jeg tvinger deg ikke til å lese postene mine... :)

S

Re: Sove med hodet mot veggen

Author: P (---.uib.no)
Date: 11-18-03 20:04

Morsomme tanker som kommer frem her. Ikke minst fra N... Selv tror jeg at søvnstillingen "med hodet mot veggen" er rent interiørarkitektonisk betinget. De fleste senger har en noe høyere og mer dominerende hodegavl enn fotgavl (hvis det finnes en slik i det hele tatt). Dessuten finnes det en del luksusutgaver av senger som i tillegg er forsynt med integrerte nattbord. Og selv om sengen ikke er av en slik type er det ofte svært praktisk å ha et nattbord (og for så vidt også en lampe av ett eller annet slag) ved hodegavlen. Når dette møbelkomplekset skal plasseres i et rom er det ikke så mange alternativer å velge mellom. I hovedsak, hvis man ser bort fra diagonalløsninger osv, vil plasseringsmulighetene deles mellom "hodet mot veggen" og "hodet ut i rommet" alternativene. Og fra et interiørarkitektonisk ståsted tar det seg rett og slett bedre ut med "hodet mot veggen". Rommet blir mer harmonisk på den måten. Langt de fleste rom er møblert på denne måten. Man kan med rette hevde at rommets tyngdepunkter er plassert i periferien snarere enn i senter. Og på denne måten legges det også bedre til rette for menneskers samhandling (nei N, jeg skrev ikke samleie...) i rommene.

Jeg har mine tvil når det gjelder evolusjonistisk adaptasjon som grunnlag for "hodet mot veggen" søvnstilling. Når vi først sover er vi lette bytter uansett. Tanken om at beina er mindre kostbare enn hodet er bare delvis berettiget. Har et rovdyr først tatt beina, er det ikke mange steder hodet kan gå... Dessuten vil et rovdyr som først har tatt for seg litt, antagelig ta resten også. Blir ikke hele mennesket spist der og da, så kommer det sikkert godt med å ha litt til senere. Eller kanskje finnes det avkom som også er sultne. Beskyttelse virker som en lite plausibel forklaring. Kulturen har nok spilt en vesentlig rolle som C påpeker, men jeg tror altså at det er arkitekturen som har vært det avgjørende her.

Re: Sove med hodet mot veggen

Author: M (---.dialup.online.no)
Date: 11-21-03 08:38

Det hadde ikke vært særlig lurt med en haug med lamper stående midt i rommet nei!

Klart det er tryggest å sove med hodet inn mot en vegg! Jeg kjøper evolusjonsperspektivet. Tenk deg at du ligger i en hule, så kommer det en farlig greie...menneske eller dyr...som angriper. Det raskeste er å ha våpen og ansikt vendt mot angriperen, som man vet kommer inn åpningen.

Dette er i hvertfall grunnen til at jeg ligger med hodet inn mot veggen! :-)

Re: Sove med hodet mot veggen

Author: A (---.dd.nextgentel.com)
Date: 11-23-03 11:50

Jeg sover med hodet (og puta) mot veggen fordi da detter ikke puta på gulvet!

Re: Sove med hodet mot veggen

Author: s (---.hf.uib.no)
Date: 11-26-03 15:27

Hei!

Første gang jeg er inne på POSbase. Hadde sikkert vært lurt av meg å være her før, i o m at vi hadde examen igår, men har vært så "giddalaus" dette semesteret... Gikk det bra på examen?

Denne diskusjonen om å sove med hodet mot veggen, slo meg som den mest interessante her inne:) Og det er en bra diskusjon, med mange meninger og "teorier" som er lagt fram.

Dersom N er seriøs, vil jeg bare si at jeg også er kristen, og tror på Bibelen. Men jeg er derimot en av de mer "radikale", som godtar evolusjonsteorien (og homofile, og ateister, og muslimer som kommer til Norge (går ikke rundt og snakker om synd og "brenning i helvete" - det får Gud ta seg av!!) Uansett;). Det ER faktisk mulig at vi stammer fra apene. Med det betyr IKKE at vi "er" aper; vi er mer komplekse. Én dag for oss kan være det samme som flere tusen år for Gud, og skapelsen trenger ikke nødvendigvis å ha skjedd over 7 dager; det kan være snakk om 7000 eller 70 000 år for Gud!

Jeg kjøper det om evolusjon:) Og det er fortsatt folk som blir overfalt i deres hjem om natten. Men i vår tid er det vel for det meste mennesker som overfaller hverandre, og vi ser godt forskjell på hodet og beina. Så det er rett og slett bare å gå bort til "hodeenden" av sengen, og slå til der..! Så nå for tiden er det vel ikke så mange, i alle fall ikke i vår kultur, som får beina slått i knas, før overfalls mannen slår til mot hodet...

Dette med kultur og læring høres også faktisk ganske sannsynlig ut. Men interiør-teorien er jeg litt mer skeptisk til; vi bestemmer selv hvor vi vil ha sengen stående, og hvordan vi vil sove...

Velvel, fortsett skrivingen! Og GOD JUL!!!

S

Sekvensiell og parallell prosessering

Author: J (---.dd.nextgentel.com)
Date: 10-21-03 13:41

På side 132 i boka om kognitiv psykologi nevnes det at det verbale systemet sies å være sekvensielt, mens det visuelle systemet sies å være parallellt. Hvordan skal jeg forstå disse begrepene?

Jeg vet f.eks. at parallelle prosesser vil si at det foregår flere operasjoner samtidig, men hvordan skal det ses i sammenheng med det visuelle systemet? Vil det si at når visuelle prosesser er gjeldende vil de kombineres med motorikk i form av øyebevegelser/muskler etc?

Re: Sekvensiell og parallell prosessering

Author: Lecturer (129.177.86.---)
Date: 10-22-03 11:52

Når du leser noen, du kan bare lese ord etter ord. Også når du hører eller sier noen, du må gjøre det sekvensielt. Men når du ser noen, du kan få mange inntrykk i samme tid, å så sier vi at du kan prosessere informasjon fra et bild parallellt. For eksempel, når jeg beskriver et ansikt verbalt, jeg må fortelle element etter element (stor munn, liten nese), men når du ser ansiktet, du kan få ansiktens elementene umiddelbart, parallellt. Naturligvis, det inneholder også sekvensiell prosessering fordi du kan ikke få alle inntrykk i samme tid (men mange inntrykk). Er svaret mitt klart?

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Re: Sekvensiell og parallell prosessering

Author: N (129.177.87.---)

Date: 11-09-03 19:14

Jan Ove Larssen wrote:

> På side 132 i boka om kognitiv psykologi nevnes det at det
> verbale systemet sies å være sekvensielt, mens det visuelle
> systemet sies å være parallellt. Hvordan skal jeg forstå disse
> begrepene?
>
> Jeg vet f.eks. at parallelle prosesser vil si at det foregår
> flere operasjoner samtidig, men hvordan skal det ses i
> sammenheng med det visuelle systemet? Vil det si at når
> visuelle prosesser er gjeldende vil de kombineres med motorikk
> i form av øyebevegelser/muskler etc?

Re: Sekvensiell og parallell prosessering

Author: Lecturer (129.177.86.---)

Date: 11-27-03 13:22

When we look at a scene, we see different things at the same time. Of course, there exist both parallel and sequential processes in the visual system, because you move your eyes and take in new information after each eye-movement. But in contrast to the verbal system, we can see things in parallel.

There has been a discussion whether the distinction between sequential and parallel processes make sense because you can express each parallel process as a sequential process. For example, if the time frame is very narrow (1 ms or less), then even parallel visual processes can become sequential.

Spring 2004

Social constructivism and cognitive psychology

Author: Lecturer (129.177.86.---)

Date: 03-24-04 15:20

In the article by Klahr and Simon, the authors defend themselves against being labelled social constructivists (or other labels for scholars who think that all scientific knowledge is social construction). They do this because they are afraid that physicists and other scientists toss all social scientists into the same basket so that even hard-line cognitive psychologists become social constructivists!

What do you think: How does cognitive psychology relate to social constructivism? Can knowledge about cognitive psychology be reduced to cultural or historical constructions of what our mind is and how it works? Do you have examples for that? Or does acquisition of scientific knowledge in cognitive psychology not depend on such constructions? But how could we falsify that claim (is it falsifiable at all)?

What are the consequences for cognitive psychology if we think that our understanding of it is barely social construction? If not: What could cognitive psychology learn from social constructivism? Could we imagine an in-between position that some, but not all knowledge in cognitive psychology is socially constructed?

Re: Social constructivism and cognitive psychology

Author: S (---.dialup.online.no)

Date: 03-26-04 07:57

I think cognitive psychology can investigate how we think, but that we need social construction to understand what we think. In one of the previous postings I claimed that we tend to create dicotomous categories (male-female, young-old) and Petter disagreed, saying that there are a lot more sex categories. I agree that there are several, but i think we tend to use them dicotomously, ie male-female, or gay-straight. I think that this tendency (the dichotomy) is a consequence of how our brains are wired, but that the type of categories we use is socially constructed.

And now to my favorite example. churchland claims that consciousness is an illusion and therefore need not be studied. The first part of his statement may be correct, but I disagree with the second part. I believe the content of consciousness can be fruitfully investigated from a social constructivist point of view. Our illusions tell us a lot about who we are.

Re: Social constructivism and cognitive psychology

Author: M (---.psych.uib.no)

Date: 03-28-04 17:14

It is interesting to look at the relation between postmodernist thought and cognitive psychology, since the cognitive revolution came as a revolt against the denial of top down processing that dominated contemporary psychology.

Top Down processing is central to the claims of postmodern psychology, as it describes how an identical stimuli can be processed differently by two different observers and result in different perception of what was actually seen.

naturally, this is strong evidence against the central tenet of radical empiricism, namely that objective observation of the world is possible. If we are unable to "turn off" top down processing, how do we know that what we see is not a result of our own mind's mental tricks?

Philosophically this is only a reformulation of Immanuel Kant's arguments against the philosophy of David Hume, a debate which will go on at least into the fourth millennium in my opinion.

However the switch into cognitive neuroscience is a step in the other direction. As a result of their own findings, cognitive psychologist can no longer claim to do unbiased observations. Therefore they try to use the apparently objective methods of physics (always the household god of the radical empiricist). In my opinion, these methods will prove just as biased by culture and top down expectancies as any other. However the guise of physics and medicine gives higher cultural status and easier access to funding (do not underestimate the power of the white coat).

I think cognitive psychology is caught in one of the more amusing predicaments of science. Trying to explain away their own results because of the uncomfortable consequences it has.

Re: Social constructivism and cognitive psychology

Author: P (---.vpn.uib.no)

Date: 03-30-04 17:41

I think it is unfortunate that students in psychology is force-fed through the curriculum (kvalitativ metode, vitenskapsteori, Walkerdine) so much post-modernism/structuralism/social constructivism without the appropriate counterweights. I'd be happy if anyone could tell me where in the curriculum there is to be found criticism of the so-called postmodern approach.

Its ironic that the samfunnsvitenskapelige fakultetet give a more nuanced view of this approach. So let me inform you of criticism of post-structuralism that is found in the sosiologi grunnfag curriculum. The following is from p.617-618 in Sociological Theory (Ritzer 2000)

1. their foundation is based on non-falsifiable assumptions
2. it is ideology. truth is not a criteria, wether we believe it or not is the criteria that guides what ideas to follow (in other words very fitting for all you closet-christians)
3. broad generalizations are offered without qualification
4. their ideas are so abstract and vague that they are impossible to connect to the social world.
5. in spite of often criticising grand narratives they often offer their own grand narratives.
6. no normative basis to judge soceity
7. lack of theory of agency
8. they lack a vision of how soceity should be
9. it leads to profound pessimism
10. they often ignore the key problems of our time
11. feminists dont like them (I think this is more of a up-side than criticism, though :)

Yes, Magnus and all the others who have uncritically bought the postmodernism mumbo-jumbo, you can borrow the book from sociology! :(

Re: Social constructivism and cognitive psychology

Author: M (129.177.69.---)

Date: 04-01-04 13:27

It is easy to copy a book into the forum, but much more difficult to defend the claims it makes.

First of all. The methods courses at the profesjonsstudiet are 4 quantitative and 1 qualitative, in addition to a very heavy quantitative focus on grunnfag. That makes our methodological education about 85-90% quantitative. A few courses in alternative methodological views is, in my opinion, crucial if we don't want to end up like religious zealots who accept quantitative methods at face value. Think about it, don't you think you have a better foundation to oppose social constructivism after learning about it? In my opinion the idea that there should be "appropriate counterweights" to all alternative views reminds me of creationist who would like counterweights to the theory of evolution. At our level we are supposed to think critically and consider everything we learn. The tools we use are the knowledge from quantitative methods, qualitative methods, theory of science and postmodernist thinking. Someone might want to be a "believer" in selected theory, but I am grateful that this university makes an effort not to educate ignorants and zealots.

To briefly answer your points:

1. their foundation is based on non-falsifiable assumptions

The foundations of all science is always metaphysical, by attacking the methods and practices of science you move beyond the level of empirical investigation. An example: the 0,05% significance level is a metaphysical construction that divides empirical results. But the choice of the exact number is metaphysical and infalsifiable.

2. it is ideology. truth is not a criteria, whether we believe it or not is the criteria that guides what ideas to follow (in other words very fitting for all you closet-christians)

There is no objective truth. The scientific method (to trust your observations only, and that there is objective truth) is also an ideology.

3. broad generalizations are offered without qualification

Which broad generalisations. What qualification? Presumably he means scientific (quantitative) qualification. That is the same as saying "you may criticise the rules of science, as long as it is within the rules of science)

4. their ideas are so abstract and vague that they are impossible to connect to the social world. opinion. Not fact. Again, who should decide such a criteria?

5. in spite of often criticising grand narratives they often offer their own grand narratives.

The ideology is to replace the existing metanarratives with better, local stories. A change to a better narrative is always welcomed.

6. no normative basis to judge society

opinion. Not fact.

7. lack of theory of agency

don't know that term...

8. they lack a vision of how society should be

Postmodernism is all about changing the grand metanarratives in order to make a better world. Incredible statement totally without any substance.

9. it leads to profound pessimism

I can see how quantitative scientist becomes pessimistic after having their methods questioned. Lets all agree and be happy ;=) . Quantitative scientist made the nuclear bomb. Not very positive that either...

10. they often ignore the key problems of our time

What are the key problems? Those that the quantitative scientist feel? opinion, not fact.

11. feminists dont like them (I think this is more of a up-side than criticism, though :)

This is ad hominem argumentation.

see you round!

Magnus

Re: Social constructivism and cognitive psychology

Author: P (---.vpn.uib.no)

Date: 04-05-04 18:53

It was not my intention in my last posting to be unclear. But it looks like Magnus misunderstood my "take-home message".

Of course it is easy to copy something from a book. My intention was not to deliver a deep water tight philosophical argument that disintegrates the basic assumptions of postmodern theory. As I said I'll be more than willing to help anyone interested in literature. My intention was merely to let people know that there is a large corpus of arguments criticising postmodernism. The list is of course just a list. I don't see it as my responsibility to use time on educate you on topics the literature will do better.

"Someone might want to be a "believer" in selected theory, but I am grateful that this university makes an effort not to educate ignorants and zealots."

-let me reiterate myself in other words: it is puzzling that we are expected to know about postmodern theories but not about their critics. Especially when this type of criticism is bread and butter at faculties the theories were built. These so called postmodern theories (the name implies it is something avant garde; it is not. We also have the post post-modern theories) have an inbuilt criticism of common ideas about whats good scientific method (i.e. how to acquire knowledge about the world). You can say that "oh, we dont need no criticism. We should use our own intellectual capacity to generate these arguments. Thats what the university is all about." I disagree if you think that we dont need to read criticisms (if thats what magnus is saying its also inconsistent with his acceptance of postmodernism which is criticism par excellence). Most of us don't think that we are informed enough to see through theories like they were transparent. Thats why you shouldnt let postmodernism reign free with its anti-empirical and quak(kvakksalver)-opening consequences. The university should aim at giving us perspectives to equip is ways that facilitates our critical thinking skills.

" In my opinion the idea that there should be "appropriate counterweights" to all alternative views reminds me of creationist who would like counterweights to the theory of evolution."

Are you saying that postmodernism is a theory grounded on an empirical basis equivalent to the modern synthesis of evolutionary theory? If you do, Magnus, please elaborate.

My memory of ex.phil is also becoming a little rusty. Whats the difference between a "solist" (the first extreme sceptics) and a postmodernist?

What is an emotion?

Author: Lecturer (129.177.86.---)

Date: 03-08-04 18:38

What is an emotion? How can we define this concept? Please enter your definition and comment on other's definition of emotion.

Re: What is an emotion?

Author: P (---.vpn.uib.no)

Date: 03-16-04 16:28

M said in class today that the phenomena of mixed feelings could falsify claims about a predictabel system of emotion-states. I guess he would be pleased to know that evolutionary psychology could come to the rescue with its concept of evolutionary molded modular domain-specific-neural hardware. There could be more or less independent emotional systems operating in parallell competing for access to consciousness; in other words mixed feelings. But on the face of it this rescue of Rosemans theory smells a like ad hoc. What do you think?

Re: What is an emotion?

Author: S (---.ub.uib.no)

Date: 03-19-04 15:31

It could be useful to start with the conception in common (non-psychological) language: Britannica defines it as:

“a distinct feeling or quality of consciousness, such as joy or sadness, that reflects the personal significance of an emotion-arousing event. “

In other terms common conceptions focuses on

(1) the dimension of subjective experience (The feeling “inside” of being, for instance, scared)

Psychological literature adds certain dimension to this:

(2) Physiological responses (SCR and increased heart-rate)

(3) Expressive behaviour (Lifting eye-brows or whatever)

(4) Instrumental behaviour (Running away)

(5) (Cognitive) Appraisal of stimulus (“This is dangerous!”)

(6) (Cognitive) Appraissal of one`s own Physiological responses (“My heart is beating fast, so I must be really scared!”)

Did I forget something? Just to make sure we all loose any sense of an overview, different theories emphasizes these dimensions differently using different empirics to support them. Although most scholars assume interdependence and draws bidirectional arrows between most components in their models, it still seems important for theorists to determine the order of appearance of the dimensions and which one is the most important.

Can we not for the sake of simplicity agree on just a few things to remember for our exam and future professional practice? I suggest:

- 1) Emotional dimensions include: subjective experience, expressive and instrumental behaviour and cognitive appraisal of various kinds.
- 2) Changes in one dimension affects levels in other dimensions.
- 3) Especially relevant to this course in cognitive psychology is that cognitive appraisal influences all other dimensions of the emotion (as demonstrated for physiological and expressive responses in respectively Lazarus` and Schacter & Singer`s classic experiments).

Please ignore my next and last remark, unless you are interested in the unanswerable questions on consciousness: What is the relation between the various mental dimensions of an emotion, i.e. between (1) feeling “inside” and (5) & (6) cognitive appraisal? Can they be distinguished? Can we measure or manipulate them separately?

What is a category?

Author: Lecturer (129.177.86.---)

Date: 03-08-04 19:02

People categorize. What is a category? How do people match an exemplar (object; people) to a certain category (fruits; Americans; things we need to fo to Mexico)? Please describe how you think people are categorizing and comment on others' opinions.

Re: What is a category?

Author: P (---.vpn.uib.no)

Date: 03-15-04 22:52

Categories are for making a chaotic world more predictable and therefore would evolution select brains that could categorise. If everything seemed totally unique it would take terribly long time to learn how to predict life-relevant events in the world. It is for instance very practical to know a persons gender so you can make assumptions of different individuals basic nature.

Peoples categorization is a function of experiences with category-members embedded in the neural hardware made by evolution.

Re: What is a category?

Author: S (---.dialup.online.no)

Date: 03-16-04 08:38

Why do we tend to categorize in twos (male-female, in-group - outgroup) instead of as conjunctions? I consider myself part of a number of groups/categories but usually not at one category defined by a conjunction of the groups i think i belong to.

Re: What is a category?

Author: P (---.vpn.uib.no)

Date: 03-16-04 17:10

"Why do we tend to categorize in twos (male-female, in-group - outgroup) instead of as conjunctions? "

sexual preference is categorical belonging to five or more different preferences (homosexual, lesbian, paedophilian, heterosexual and bisexual). Style or aesthetic belonging as well as ethnicity is also multicategorical. So i think that there are important domains where we have more than two poles for our categories.

How do people become creative?

Author: Lecturer (129.177.86.---)

Date: 03-08-04 19:08

What is important to become a creative person? Great inventors, scientists, or artists: What made them creative? Please tell us your opinion, and feel free to comment on the others' contributions.

Re: How do people become creative?

Author: L (129.177.89.---)

Date: 03-12-04 12:51

?What made them creative? Is it something inherent in you (nature) or is it a consequence of the right environmental experiences (nurture) - I think it's a combination (of course...)

to look at this in a slightly different frame - consider the following:

A old Danish literature perspective on this issue, points to the dispute between H.C. Andersen and Henrik Pontoppidan

I H. C. Andersen`s fairy tale "den grimme ælling" (don`t know the english title) - he tells the story about the little/baby duck who is ugly in its youth, but eventually wil become beautifull and remarkable in its "adult-life" - The point is that "something" (fx talents, skills etc.) which is inherated in you, will sooner or later emerge and blossom. In other words this is at story which favors the "nature" perspective - A very commom interpretation of this story is that it reflects H. C. Andersen`s own life. born into a ressource limited family, but he could not suppress the talents and grew to be a famous and respected writer of his time.

The opposite perspective was taken by the Danish writer Henrik Pontoppidan, who was strongly against H. C. Andersen's viewpoint. He wrote the story "fugle flugt", which shortly is about a "baby" hawk, I think, who by accident is misplaced in a "hense-farm" (those animals which produce eggs) and starts gradually to act like those. The days goes...and I don't remember the ending, sorry!! (read it your selves if you find the story interesting)

The point is, that Pontoppidan writes an excellent story, which favors the "nurture" perspective, with its constraints and oppertunities.

The hawk's inherated dispositions was to hunt and eat the hense (hønsene), and to be a fantastic acrobat in the air, but this never happened- instead the hawk became a remarkable skilled worm pecker, because the environment provided a lot of constraints and few oppertunities.

I know this text lacks details, but I hope I've got the message through?

You can the world's great gifts in you, but if the environment will not "pave the way" - perhaps you never get a chance to show what you are able to - or even you will experience your talents

Re: How do people become creative?

Author: S (---.dialup.online.no)

Date: 03-14-04 08:43

1. Could creativity, like expertise, be related to hard work? Creative writing sure takes a lot of time. Generating sentences, choosing the best one, etc.

2. Computers can also generate new and unusual sentences, but that does not make them (the sentences) creative. They need to be novel as well as related to something we know, such as metaphors and images. Perhaps the generation part comes from Kosslyn's generative assembly device in the left hemisphere and the selection from other parts of the brain?

3. Is it possible to posit a (materialistic) relationship between creativity and consciousness?

Re: How do people become creative?

Author: Lecturer (---.uib.no)

Date: 03-14-04 19:00

Can we define more precisely what creativity is? When an author writes a book where he claims that he analyzed Homer's Odyssey and concluded from the geographical descriptions that Odysseus and his warriors sailed around Florida: This was utterly wrong and did not have any impact on archaeology, but is it creative?

Re: How do people become creative?

Author: P (---.vpn.uib.no)

Date: 03-15-04 21:56

Defining creativity. Maybe one should make a distinction between constructive creativity and irrelevant creativity. Irrelevant creativity meaning acts which produces consequences of no immediate or probable future value. Constructive creativity could denote products of mental acts that seemingly contribute to human joy or material-life situation.

Postmodernist theory could maybe be an instance of irrelevant creativity since it just seem to be hugely creative in its vastness of elaborate hypotheses but having no apparent material or psychological benefit. How many life-bettering therapies have postmodern/extreme social constructionist theories bred?

True creativity is found in pop-music and hard science! :)

Re: How do people become creative?

Author: M (---.uib.no)

Date: 03-15-04 23:17

I don't believe that creativity is different from other forms of problem solving and cognition. To be creative is to think outside of the constraints that has been created, its "problem room".

Unfortunately, the educational system in most cultures are much more concerned with improving the skills inside the pre-defined borders than to train the children in how to think outside the problem room.

In addition there is a certain trait that determines how interested you are in this kind of thinking, but in my opinion, there is no "creativity skill".

Creative environments are those that reward thinking outside the problem area. In these environments people gradually increase the amount of cognition that is aimed at thinking outside the "problem room". Unlike our own university that rewards conformity to the problem room defined by professors.

If you ask about the use and necessity of creativity, I think you should look at Nokia and Microsoft, two hugely successful companies that created new technology by redefining classical information technology problem rooms.

Computers at this stage cannot be creative, cause they are unable to think outside the limits imposed by the programmers. Even if they are capable of random behavior, this is only programmed random behavior, and does not constitute creativity.

Any attempts (like P's) of defining limits for what should be "constructive " creativity is impossible because of the very nature of creativity, to expand any borders imposed on it.

Re: How do people become creative?

Author: S (---.dialup.online.no)

Date: 03-16-04 08:29

I agree with M that creativity is thinking outside the problem room. But I think creativity exists in small things too. We can make our semesteroppgaver creative by combining unusual viewpoints, or if stuck with an uncreative topic working on the language. This type of being outside the problem room is in no way constrained by the education system.

As to constraints, anything novel generated by f.eks a computer is hardly creative. There is a selection process that is in my opinion human and related to our shared culture. What makes Shakespeares language creative is that it taps into images and metaphors that are not immediately obvious. It's like an oddball paradigm reaction followed by an Aha! If there was no aha, (if the metaphor was meaningless in any stretch of the imagination) the sentence would not be creative.

And P, I think postmodernism is excellent for investigating the mind body problem: Consciousness: illusion or construction? I think it gives us tools to build a bridge between a brain-correlate reductionistic view and the self-reflective "erkjennelsesmessige".

Re: How do people become creative?

Author: P (---.vpn.uib.no)

Date: 03-16-04 17:03

"Any attempts (like P's) of defining limits for what should be "constructive " creativity is impossible because of the very nature of creativity, to expand any borders imposed on it." If I understand M correctly he claims that that anything that in one way or the other is new in comparison to some predefined problem-room is creative. I think the problem with this unnuanced definition is that everything becomes creative. Most thoughts you think for instance is thoughts that in a way are unique. You could say that they are unique -yes; but creative -not. But who are to decide what the existent problem room is and what if the individual is not aware of this problem room. Then on an individual level everyone could be immensely creative as long as they are not aware of existing "problem-rooms". I think that creativity must be judged from a societal or contextual perspective. What is creative on this level? And as the naive dreamer I am I say: whatever let us jump to unforeseen seas of knowledge that can be used now or in the future to make the world a better place! Hipp, hipp, Hurra!

And for the postmodernist aficionados: if their assumption of the universe consist of non-universal (i.e. local), historic-cultural specific rules that by nature cannot be generalised to other times and places then they are on their way to the pre-enlightenment philosophy of science.

Many have wondered why it was that the European science made such great technological innovations that we ended up ruling the world. At the beginning of the enlightenment the Chinese science was at the same level as the European in terms of amount of knowledge about the world. But what made the enlightenment the catharsis of knowledge was the philosophical assumption of the possibility of gaining knowledge about eternal, fundamental and generalisable rules of how the world works. For the Chinese such assumptions would be heresy as they claimed that the world, as the postmodernists today, is governed by time-specific local laws if any at all. But I am no expert in postmodernism so I hope you could correct me if you think I am wrong. :) Peace!

Appendix H
Mail sent to the students concerning
evaluation of POSbase

Elektronisk spørreskjema

Tilsvarende mail ble sendt til grunnfag og embedsstudentene for begge evalueringene. Denne var sendt til embetsstudentene Høst 2003.

Hei,

På siste forelesning om kognitiv psykologi, torsdag 30. oktober, delte vi ut spørreskjemaer som brukes til å evaluere og forbedre POSbase. Dessverre var det ikke alle som var til stede. Vi håper derfor at de av dere som ikke fikk svart på dette kan ta dere tid til å svare på denne elektroniske utgaven av spørreskjemaet som dere finner her:

http://nattergal.ifi.uib.no/posbase/Questionnaire/Updated/lage_skjema.php

På forhånd mange takk og lykke til med eksamen!

Vennlig Hilsen

Anne Margrethe og Birgitte

Hi,

On the last lecture on cognitive psychology, Thursday October 30th, we distributed a questionnaire to be used in the evaluation of POSbase. Unfortunately not all of you were present. We therefore hope that those of you weren't there could help us with answering this electronic questionnaire found at

http://nattergal.ifi.uib.no/posbase/Questionnaire/Updated/lage_skjema.php

Thanks a lot and good luck with your exam!

Best regards,

Anne Margrethe and Birgitte

Intervju

Vi sendte også ut mail om intervjuer. Under gir vi to eksempler. Den første er fra høsten 2003 og ble sendt både til embets- og grunnfagsstudentene. Den andre er fra vår 2004.

Hei igjen,

For å kunne evaluere POSbase trenger vi noen studenter som kan være med på et kortere intervju (eller samtale). Intervjuene vil vare i ca. 15- 20 minutter, sted vi være psykologisk fakultet og dag vil være enten torsdag 30. okt. , fredag 31. okt eller mandag 3. nov.

Vi setter veldig stor pris på om du har anledning til dette. Gi oss gjerne tilbakemelding på når det passer for deg. Vedlagt er en oversikt over ulike tidspunkter. Skriv gjerne opp et tidspunkt som

passer for deg, så skal vi prøve å tilpasse oss. Det er fint om du også gir beskjed dersom du ikke ønsker å delta.

Med vennlig hilsen

Anne Margrethe og Birgitte

Hei,

For å kunne evaluere POSbase trenger vi noen studenter som kan være med på et kortere intervju (eller samtale). Intervjuene vil vare i ca. 15- 20 minutter, sted vi være psykologisk fakultet (5. etg) og aktuelle dager vil være fra mandag 29. mars til og med torsdag 1. april. Vi serverer kaffe og kake til de som stiller!

Vi setter veldig stor pris på om du har anledning til dette. Skriv gjerne opp et tidspunkt som passer for deg, så skal vi prøve å tilpasse oss. Det er fint om du også gir beskjed dersom du ikke ønsker å delta.

Med vennlig hilsen

Anne Margrethe og Birgitte

Oppmuntring

For å få noen på intervju i andre evaluering ble det sendt ut en oppmuntring fra foreleser til embetsstudentene. Dette ble ikke gjort i første evalueringen, og heller ikke for grunnfag i andre.

Hi -- I'd like to inform you that there are two hovedoppgavestudenter, Birgitte Gudem and Anne-Margrethe Stokke, who have set up POSbase and will now evaluate this knowledge base. They will write you shortly for making an interview appointment with you, and I'd like to encourage you to participate in this interview, as it is important to us to know how to improve POSbase, and by using POSbase and participating in the interview, you can help the Anne-Margrethe and Birgitte a lot to get their hovedoppgave done.

The interviews will be next week, from Monday to Thursday, in an office in the 5th floor of Christiesgate 12.

All the best,
Rolf