

Freie wissenschaftliche Arbeit zur Erlangung
des Grades einer Diplom- Wirtschaftsinformatikerin
mit dem Thema:

Educational Design of an Integrative eGovernment Qualification Approach

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Zusammenfassung:

The thesis presents a model, suitable for the design of any type of qualifications in integrative eGovernment education. The integrative approach combines education of adult learners and students and promotes international cooperation.

Schlagworte:

eGovernment education, integrative education, eGovernment, lifelong learning, experiential learning, networked learning, blended learning, patterns, pattern language, pedagogical patterns

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1 Introduction

We have a propensity to learn. We also have a propensity to teach. These combine to make the teacher-student relationship a very satisfying one. That it often is not, may very well be that...what is primarily a social relationship has become a technical transaction.

The Imperial Animal

The use of information and communication technologies in public administration has become increasingly popular over the last decade. Particularly widespread is the use of internet as an information medium, for instance by offering important municipal data online or using e-mail as a communication channel. eGovernment offers even more sophisticated solutions, both for internal use in the municipality as well as external services to the citizens, with a considerable potential for cost reduction and higher flexibility.

More complex application, however, require considerable investment in money and time from the municipalities as well as from their employees. Not only does eGovernment bring new technologies into the public administration, but efficient implementation often demands alteration of processes and routines. The officials working in the municipalities have to adjust to these changes, adopt new routines and sometimes even reevaluate their position and their aims within the organisation. In order to support the adjustment processes of the employees and thus increase the efficiency of eGovernment, it is necessary to offer appropriate education or training.

eGovernment has also become a topic of interest in the universities, both in research and education. As a research area, eGovernment allows the application of already existing principles and methods from areas like eBusiness, eCommerce or information management. Because eGovernment is influenced by public administration and not by business administration like eBusiness and eCommerce, it also offers new challenge. Because of the close proximity of eGovernment research to the practice, universities often seek the opportunity to cooperate with municipalities on common projects.

The universities offer skills in education and research in eGovernment and the municipalities have practical experience with eGovernment projects, but are in need of training for their employees. Hence, it lies at hand, that the cooperation of universities and municipalities in the area of eGovernment education offers substantial synergy effects. It is therefore the aim of this thesis, to develop a concept for education in eGovernment, that integrates both the instruction of students as well as adult learners from municipalities. Additionally, due to increased internationalisation and globalisation, which also affect eGovernment, international cooperation has to be a part of the integrative approach.

1.1 Aims of the Thesis

The previous section has described the background of the thesis area of interest. The thesis seeks to create an optimal educational design for the use in integrative eGovernment education. Although the resulting design will probably fit other disciplines, too, it has to be kept in mind, that it is primarily meant for eGovernment. To create such a design, the thesis seeks to answer following questions:

1. **Who are the different parties involved in eGovernment education? What are their roles and what goals do they pursue?**

To design a suitable qualification approach, it has to be first explored, who are the participants (direct or indirect) in integrative eGovernment education. Further, parties involved or interested in the education have to be accounted for. By describing these stakeholders and defining their goals, the overall goals of the qualification approach can be derived.

2. **Which didactical principles and methods are suitable to support the realisation of these goals?**

Once the goals of the approach are set, it has to be decided, which design is suitable for achieving these goals. Such design contains pedagogical theories and methods as well as modelling techniques.

3. **Which relevant experience can be used to evaluate the chosen principles and methods and how does it influence them?**

When the theoretical design has been created, it is necessary to evaluate the design in practice. This way, the suitability of the design can be tested and possible mistakes can be corrected. Particularly experience from international educational projects in eGovernment is suitable.

4. **How can the derived principles and methods be further improved?**

Based on the results and findings of the practical experience, the created design can be discussed and altered, if necessary. Through this, the design will be made fit for the use in educational practice.

1.2 Structure of the Thesis

The structure of this thesis is based on the four questions from section 1.1 (see fig. 1.1).

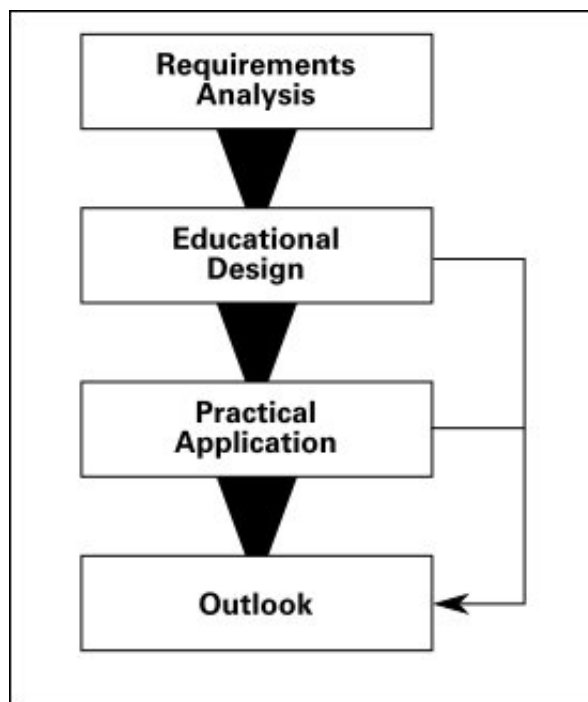


Fig. 1.1: Structure of the thesis

First, the requirements and the design background will be presented (chapter 2). The stakeholders will be identified and their goals described. Further, the didactical requirements will be discussed. Then, in chapter 3, an educational design, suitable for eGovernment education, will be presented. This chapter is the core of the thesis. It describes the background, possible content of an educational approach and later a design model, offering particularly pedagogical and methodical support. This model will be verified in practice in chapter 4, using an international project between Dresden, St. Petersburg and Kaunas. The findings from chapter 4 will be used to improve the model and make it suitable for further use in chapter 5.

2 Requirements Analysis

The following chapter describes the background requirements of integrative eGovernment approach. First, in section 2.1, the integrative nature will be discussed in detail. Section 2.2 is concerned with the stakeholders of the educational approach. The didactical and other requirements will be examined in sections 2.3 and 2.4. The resulting requirements of the whole design are stated in section 2.5.

This thesis follows the idea, that in order to be able to identify goals of an educational design, goals of all stakeholders in the design have to be known. The goals of the design itself - the design being an abstract construct - is based on the stakeholder goals. It is however possible, that the stakeholders hold contradictory goals. In this case, either compromise has to be found, or priorities have to be set for the stakeholders' goals. Similar approach will be taken concerning the restrictions.

When attempting to compromise and especially when setting priorities, the character of the restriction has to be considered. It is possible, that some goals or restriction can be K.O. criteria, meaning, that their fulfilment is essential to the stakeholder. It should be attempted to comply with such criteria, or else there is a risk of dissatisfying the stakeholder without the opportunity of compensation. Even here, however, conflicts can occur and it might be necessary to decide, which stakeholders (with their goals and restrictions) are more important.

2.1 The Integrative Nature of the Educational Design

The educational design, which this thesis presents, is mainly concerned with the area of eGovernment. eGovernment, as will be explained later on (see section 2.1.2), is a complex area with a direct connection to the practice of public administration. This firstly increases the number of parties interested in the topic and secondly creates a need for more complex educational methods. The area of pedagogy, luckily, provides a vast amount of theories and techniques, yet it is unlikely, that a single theory or technique will completely fit the needs of eGovernment education. More probably a combination of several theories will be necessary.

In order to decide upon suitable methods, this section first explores the subjects of Business Informatics (see section 2.1.1) and eGovernment (see section 2.1.2). Based on the characteristics and needs of these subject, educational areas will be identified (see section 2.1.3).

2.1.1 Business Informatics

Business informatics (BI) is a rather young research area. Its boundaries are not yet clearly defined, especially, as it stands between several disciplines. In the English speaking community, there is not even a clearly defined naming. The frequently used term “Business Informatics”, which is also to be found in this thesis, is an exact translation of the German “Wirtschaftsinformatik”.

There are several possible definitions of BI, most of them originating from Germany, where BI is already acknowledged as an independent discipline. FERSTL and SINZ consider business *information systems* the main object of focus of BI. They define information systems as systems, used to support the entire process of handling information ([Fers⁺01], pp. 1-2). According to this definition, BI acts as an intermediate between information technology (IT) and business administration, its aim being to assure best possible application of informational technology in the management information flow.

However, when focusing on information systems, it has to be taken into account, that they contain both human participants as well as machines, thus forming a rather special social environment (comp. [Fers⁺01], pp. 1-2). In order to design and administer such environments effectively, besides IT, support from disciplines such as psychology and sociology is also necessary. Furthermore, FERSTL and SINZ focus their definition mainly on information as a production resource. But the research in BI has already discovered a new factor, that appears to be at least as important as information (comp. [Krcm⁺96], pp. 10-18; [Prob⁺97]). This new or else newly found factor is *knowledge*, formally defined as a purposeful combination of information ([Krcm⁺96], p. 5). It is a widely accepted opinion in the literature, that creation and retention of knowledge are human abilities (comp. e.g. [Prob⁺97]). It is in fact still a matter of discussion, whether it is at all possible for knowledge to be stored outside human mind. The area of knowledge management led to a stronger focus on the human factor in BI. The investigation of knowledge transfer and dissemination placed the focus also on learning processes, making pedagogical theories an important part of certain areas of BI.

Recently, after the success of Electronic Business (eBusiness) and Electronic Commerce (eCommerce), the public sector has become interested in transferring the methods used in business administration onto the processes in public administration. As a result, methods from BI, which until now have been applied in the private sector, have been implemented in public administration. For the optimal support of public processes and needs, knowledge of private administration is necessary.

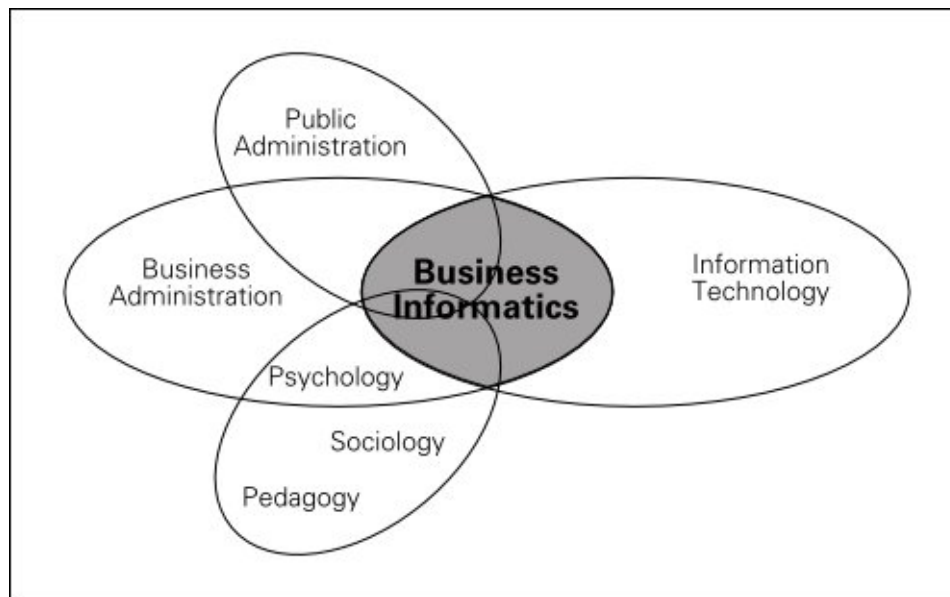


Fig. 2.1: Classification of Business Informatics

This thesis therefore regards the area of business informatics as a research area, seeking to provide connection between other disciplines (see fig. 2.1). The main focus lies on supporting and improving practice in business as well as public administration. The main tool, BI uses, is IT. However, as the focus does not lie solely on machines and automation, but also on the human actors, findings from psychology, sociology and pedagogy also play an important role.

2.1.2 eGovernment

In many countries, it has become increasingly important to lower the pending costs of public administration, while still maintaining the high level of services offered to the citizens. Often, it is necessary to supply further or more flexible service. In order to achieve these aims, the public administration has reached to the methods used in the private businesses.

The area of Electronic Government (eGovernment) has similar origins. It is the result of attempts to transfer the success in eBusiness into the public administration. Through the support of information technology and business informatics, eGovernment aims to lower the process costs, while still keeping up or even increasing productivity. By employing the internet as communication medium, higher time and place flexibility can be achieved. The citizens can reach information or even trigger administrative processes from virtually anywhere, as long as they have internet access. Given the globalisation, this can be important for mobile companies as well as citizens. Besides, due to the popularity of eCommerce, citizens have enjoyed and got used to the comfort

of being able to reach goods and services from their homes. This way, the pressure of the technology push of the internet is increased by the expectations and wishes of the citizens. International communities, like the European Union (EU), have also recognised the meaning of eGovernment and included it in its programmes.

When describing eGovernment, three major areas can be identified. These are Electronic Assistance (eAssistance), Electronic Administration (eAdministration) and Electronic Democracy (eDemocracy) ([Brue⁺02], pp. 10-11). *eAssistance* is concerned mainly with providing information, that the citizens need in their every-day lives. These can be e.g. openings hours of the authorities or more sophisticated application like an online database of job offers. *eAdministration* is concerned with more complex processes, as it seeks to support internal and external interaction in public administration. This comprises communication as well as transactions with citizens (A2C, C2A) and business (A2B, B2A), as well as among the agencies themselves (A2A). An example of *eAdministration* is an electronic tax declaration (C2A, B2A) or a database, shared among several agencies. *eDemocracy* attempts to strengthen the interest of citizens in democratic processes and to support these processes with electronic means. *eDemocracy* applications are for instance political discussion forums or electronic election support.

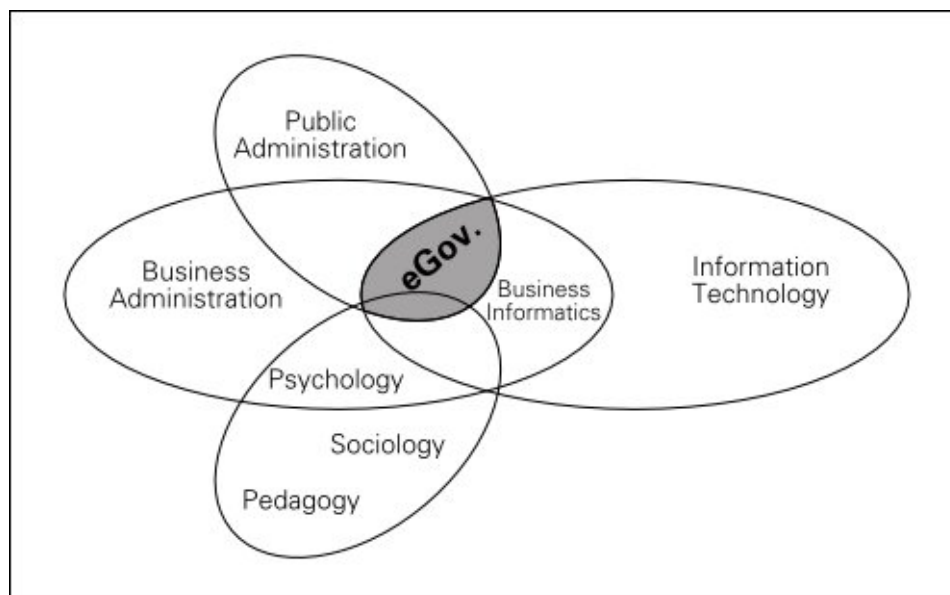


Fig. 2.2: Classification of eGovernment

As a research area, eGovernment is a fairly young and still a subject to dynamic development. The use of IT and the closeness to eBusiness are often named as its main characteristics (comp.[Brue⁺02], p. 7). Based on this idea, the opinion has been raised, that eGovernment is not an independent research area at all, but more

an application of results from other fields (particularly eBusiness). This thesis sees eGovernment as a part of business informatics (see fig. 2.2). There is a significant difference between structure, aims and possibilities in the private and the public sectors (comp. [Brue⁺02], pp. 7-8). Although there are undeniably certain similarities between eBusiness and eGovernment, most eBusiness concepts cannot be simply transferred, but have to be adjusted. As this adjustment can often be very complex and sometimes even impossible, it is the opinion of the author, that eGovernment merits its own research area.

2.1.3 Educational Needs in eGovernment

Based on the description from sections 2.1.1 and 2.1.2, it now has to be decided, what kind of education is necessary in the area of eGovernment. Following characteristics of eGovernment can be named:

- new, growing area,
- research is strongly driven by needs of the practice,
- research findings can be directly applied in the area of public administration,
- new opportunities are being opened up in public administration,
- use of new technologies in public administration,
- influenced by globalisation and
- influenced by international communities.

Given the complexity and specialisation of eGovernment (and BI) and to acknowledge eGovernment as a research area, the education should be focused on the level of higher education. As there is a clear connection between research and practice, the education has to concentrate on the practical side of eGovernment, besides offering a theoretical foundation (see fig. 2.3).

It has also been shown, that eGovernment brings a considerable number of changes into the already established processes of public administration. Though these changes are profitable for the general efficiency, they also pose a considerable pressure on the officials. For them, it is necessary to adjust to new methods and technologies. The knowledge and experience, many of them have collected over years, may lose its importance or even become totally obsolete. Further education in eGovernment for officials could support the process of adaptation and help increase the productivity under new conditions (see fig. 2.3). This thesis concentrates mainly on education of the officials,

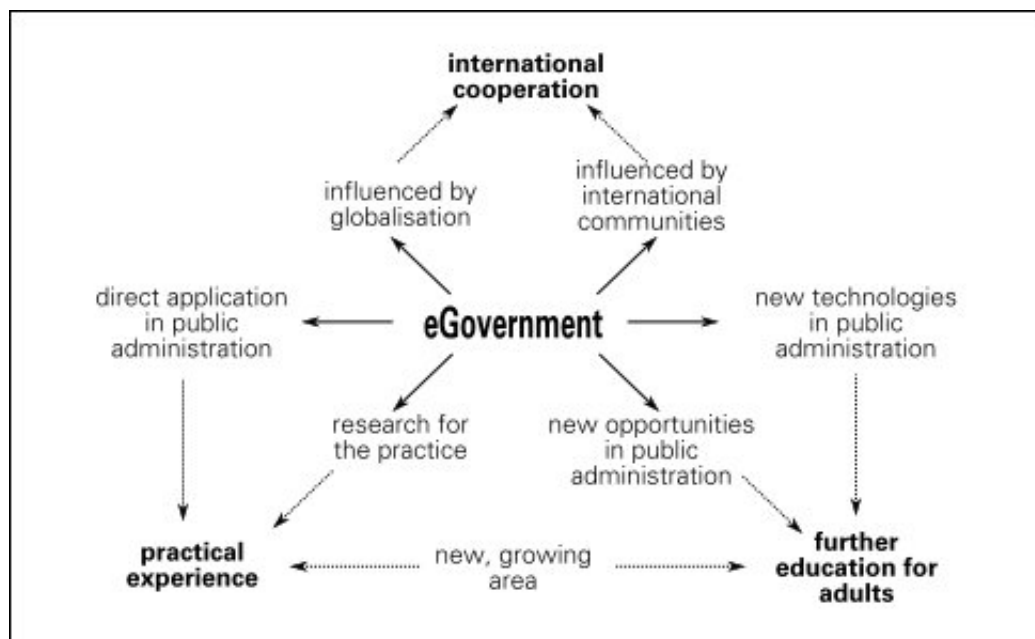


Fig. 2.3: Integrative approach

however, the necessity to learn about eGovernment can also occur in other branches, or even by the citizens.

Finally, the practice and the research in eGovernment are subjects to many international influences. Particularly research has profited from the growing globalisation and internationalisation. Through academic relations between different countries, research findings from eGovernment (or any other area) can be exchange and examined. In the practice, the increased mobility of businesses and citizens calls for higher flexibility of public administration. Besides, a certain pressure has been exerted on the countries through international organisations and communities (EU, OECD). International cooperation and international contacts have become necessary even in the area of public administration. It seems appropriate, that they should be included in eGovernment education (see fig. 2.3).

2.2 Stakeholders

Now that the understanding for the integrative approach to eGovernment has been established, the parties interested in such educational approach can be identified. In this thesis, they bear the name *stakeholders*. This term is mainly known from business administration and covers all individuals, groups or organisations affected by or interested in particular company. In this thesis, this term covers all parties who take interest or are influenced by this particular form of eGovernment education.

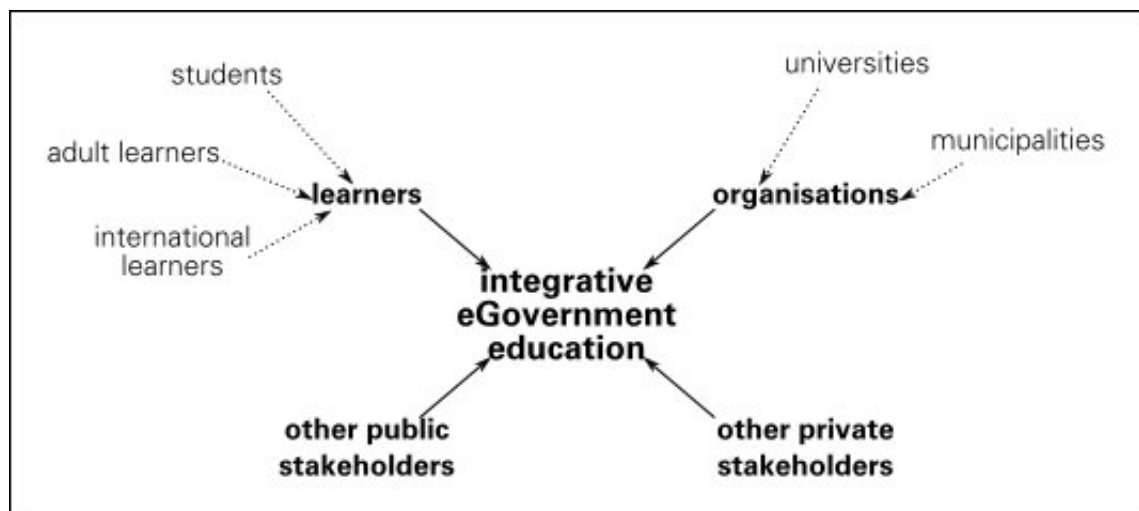


Fig. 2.4: Stakeholders

There are four main groups of stakeholders (see fig. 2.4) identified in this thesis. These are mainly the **learners**, participating in the education, and the **organisations**, potentially responsible for the qualification, as well as further **public** (see section 2.2.6) and **private stakeholders** (see section 2.2.7).

The integrative approach in eGovernment education combines formal education with further education. It has already been explained, that eGovernment is a complex area, which still needs a lot of research attention. It is therefore appropriate to place it on the level of higher education. Consequently, there are two main groups of learners. These are students (see section 2.2.1), as young adults participating fully in formal higher education, and adult learners (see section 2.2.2), who wish to further educate themselves, while still continuing their current jobs. The integrative approach also suggests, that participation of international learners (see section 2.2.3) is important for eGovernment education. These international learners can be classified as students or as adult learners. Similarly to the classification of learners, organisations offering eGovernment education can participate either in formal or in further adult education. This thesis identifies and discusses the universities (see 2.2.4) as institutions of formal higher education and municipalities (see 2.2.5) institutions interested in further education of their employees.

2.2.1 Students

Formally, the term “student” describes an individual, enrolled in scientific education in an institution of higher education ([Dude01], p. 954). Moreover, this thesis sees students as young adults participating in higher education, as their main occupation (compare to adult learners in section 2.2.2). Further, as universities are being viewed as

main stakeholders as organisations of higher education, particularly university students are in focus.

There is a number of surveys, attempting to capture the goals, that students pursue throughout their education. Student goals, however, are not easily explored. Firstly, there is still a considerable debate, concerning the “correct” measurement of student goals (comp. [Star⁺89]) and secondly, the university studies tend to influence the students greatly, causing the students’ personality and their goals to change throughout their studies (comp. [Asti99], pp. 523-526; [Star⁺89], p. 13). Yet, over the past decades, a shift of students’ interests towards more vocational education has been observed ([DiCo04], pp. 169-170). From the beginning of higher education, many students now seek direct connection of their studies to their future profession.

The higher education lasts several years and has a great impact in development of young adults. In many cases, it shapes the interests and goals of the students (comp. [Asti99]). There are therefore also goals associated with personal and social development. Based on survey among students of Dresden University of Technology, students also seek to make new contacts with their peers as well as career related contact for the future. Personal development, like organisational and management skills, also plays an important role. And not surprisingly, academic grades and successful completion of their studied are also crucial.

The criteria the students seek in eGovernment education can therefore be described as follows:

- preparation for future job/career,
- acquiring knowledge and skills in eGovernment,
- developing higher order thinking skills,
- personal development (also in connection to future career success),
- successful completion of the studies,
- attending interesting courses and
- social contacts (private as well as connected to future career).

2.2.2 Adult Learners

Adult learners in this context are defined as individuals, who participate in further education, whose main occupation however lies in their employment. The main focus of this thesis lies on the officials, working for municipalities, because the use of eGovernment in the municipalities has a significant impact on their daily work. They require enhanced media proficiency and basic understanding of the technologies. Besides, the routines and processes often have to be changed. Municipalities in many countries also advocate the view of the citizens as customers and promote stronger orientation on the citizens' needs. To acquire the skills and knowledge necessary in the changing environment, the officials are in need of further education.

Because the area of public administration is highly restricted by laws and regulations, working routines are often prescribed by law or else developed to handle large numbers of customers. However, the officials also have to be able to handle many unusual or exceptional cases and are therefore used to consulting laws, rules and other relevant materials. They also have to adapt to changes in legislation. As a result, the officials are a subject to constant informal and often unconscious learning. Education also plays an important role in the promotion, as public administrations tend to have strict hierarchies. Often, to reach certain hierarchy levels, higher education or further qualification is needed.

Employees of municipalities tend to have higher age averages, particularly in higher positions of the organisation hierarchy. Although this thesis does not share the view, that older learners are less capable to acquire new knowledge and skills than younger ones ("You can't teach an old dog new tricks"), it acknowledges, that there are differences between learner groups, that are associated with age. Even if physical characteristics (e.g. health, energy) are left out, adult learners show different personality characteristics (e.g. temperament, social attitudes), they have more experience, both in quality and in quantity, and stronger identification with roles ascribed by the society ([Long98], pp. 23-24, 26-33). These characteristics can have strong influence on the learning processes. Adult learners also have a greater variety of these characteristics. Further, surveys show, that the percentage of individuals with sufficient knowledge of at least one foreign language is negatively correlated with age ([*EC06], p. 5).

Adult learners, municipality officials in particular, have following criteria on eGovernment education (comp. [*Ruis06]):

- eGovernment education related to their work,
- qualification with accepted certification,

- suitable education times,
- preference for “classic” learning media (e.g. books) or the need for detailed explanation of new media (e.g. eLearning).
- preference for education in mother tongue and
- acceptance of a variety of learning views and habits.

2.2.3 International Learners

This thesis defines international learners as individuals, who participate in education in other than their home country. International learners can be both students as well as adult learners. In both group, there has been a growing interest in taking part in foreign education (comp. [*BIBB06], [*EU06d]).

The wish to try foreign education is particularly strong among students. The number of participants in exchange programmes (e.g. SOCRATES-ERASMUS) has been rising steadily. By 2003, the number of students taking part in the EU-programme ERASMUS has exceeded one million ([*EU06e]). Students going abroad wish to get to know foreign culture and improve their language skills. They also wish to develop interpersonal and communication skills. And of course, it is also one of the students’ goals to acquire new knowledge and skills and to broaden their views about their study subject. (comp. [*BIBB06], pp. 13-20)

Adults participating in educational exchange programmes (e.g. LEONARDO DA VINCI) seek to deepen and broaden their skills and knowledge in a particular profession. But possible even more important are soft-skills, that are acquired through the stay in a foreign country and close contact with different culture. This is particularly social and communication competence, change of attitude and problem-solving abilities. The improvement of language skills is also of great value. (comp. [*BIBB06], pp. 39-48).

International students therefore pose following criteria:

- learning to know different cultures,
- improve language skills,
- improve interpersonal skills,
- personal development and
- acquire new skills and knowledge.

2.2.4 University

This thesis concentrates on universities, as organisations, providing higher education. There are also other institutions on this level of education (e.g. German Fachhochschule), however, in the author's opinion, the universities, at least at the moment, have the most suitable capabilities for integrative education in eGovernment. The reasons for this will be explained later on in this chapter.

A university can be defined as an institution, specialised on scientific education and research ([Dude01], p. 1023). In the past decades, there has been a wide debate, about the purpose of higher education. Although there may be different practices, throughout the world, this debate is akin in many countries. It is the discussion, whether higher education should serve the purpose of personal development or if it should rather prepare the students for their future career. This problem is for instance mirrored by the existence of different institutions of higher education (Germany: Fachhochschule vs. Universität, UK: Polytechnics vs. University) or by the discussion concerning the Liberal Arts in the USA (comp. [DiCo04], pp. 162-173). Yet, this discussion, however present and up to date it may seem, is in fact as old as education itself. The conflict can be traced back as far as to the Chinese philosophers Confucius and Lao-Tse to the sixth century B.C. While Confucius saw the aim of education in integrating individuals into the society and thus ensuring harmony in the society, Lao-Tse believed, that the purpose of education is the personal cultivation and understanding itself. Similar disagreement can also be found between the philosophies of Plato, who - like Confucius - believed in cultivation of citizens for the sake of society, and Aristotle, whose theory sides with Lao-Tse, in seeing education as preparation for active enjoyment of leisure. For Aristotle, the proper activity for leisure was the search for truth. ([Alle88], pp. 13-15) More recently, this conflict has become present in the discussion concerning the Bologna Process. The Bologna declaration requires, that higher education should be related to the labour market, thus stressing vocational meaning of education ([*EU06b], p. 4; [*EU06c], p. 4).

The conflict described above can not be resolved in this thesis, nor will the thesis attempt to do so. Instead, because both the personal development as well as vocational preparation appear just as important, it will be attempted to give these purposes equal attention. This stand has also been adopted by many universities, that see their mission not only in passing practical knowledge on their student, but also in providing them further with theoretical and background education. Besides knowledge transfer, universities also seek to influence the students' attitudes, they particularly attempt to create more openness and encourage critical thinking.

Universities also participate in research, which is important in eGovernment, as it is still a developing area. Particularly for this reason, this thesis identifies universities as most suitable for integrative eGovernment education. This gives the learners the opportunity to encounter new ideas as well as participate in the research itself. eGovernment seeks new ways to increase the effectiveness and efficiency of public administrations. Participating in research helps to increase the creativity of the learners and their openness to new methods and ideas. The subject of eGovernment is for many universities the opportunity to apply already existing methods and ideas in a new context. This is particularly the case with knowledge from eBusiness, business administration and business informatics. Yet, as it was explained in section 2.1.2, eGovernment has a lot of specific characteristics, that should not be left out of focus. It is therefore important, that not only the technical and economical sides of eGovernment are accounted for, but that public administration finds equal attention.

The criteria of universities can therefore be summed up as follows (based partially on a survey among teaching staff at Dresden University of Technology)(comp. [John97]):

- teaching knowledge and skills in eGovernment and related areas,
- developing students' ability to generalize these and use them in different contexts,
- helping students develop higher order thinking skills and academic values,
- supporting personal development of students (not only in relation to future career),
- preparation of students for working life in general (not a preparation for a concrete career) and
- promotion of research.

2.2.5 Municipality

As mentioned before, eGovernment offers many advantages to the municipalities in form of higher flexibility and a cost reduction potential. The implementation of eGovernment alters many administrative routines and requires support of their employees. However, these changes are often anticipated with anxiety and mistrust of the employees. It is therefore necessary to motivate the officials to understand the advantages of eGovernment and redefine their roles with regard to the changing routines and structures.

Knowledge and skills related to the use of new technologies in public administration are undoubtedly important for the officials. But eGovernment also requires changes in views and values of the administration. Higher service and customer orientation is needed. The growing globalisation and internationalisation also calls for cross cultural skills and language knowledge of the officials.

The criteria for the municipalities are therefore as follows:

- technology oriented education in eGovernment,
- deeper understanding of eGovernment, its opportunities and threats,
- development of service orientation,
- development of interpersonal skills and
- development of cross cultural skills.

2.2.6 Other Public Stakeholders

The described integrative approach in eGovernment education covers several topics, that currently belong to public interest. Therefore, there are many organisations and public parties, who are potential stakeholders in this topic. Particular areas of interest are *eGovernment*, *eLearning* and *lifelong learning* (see section 2.3.2).

Organisation for Economic Co-operation and Development

The Organisation for Economic Co-operation and Development (OECD) has a wide range of programmes for both education and government. It is therefore not surprising, that it is engaged in all three topics named above. OECD sees lifelong learning as a guiding framework for its educational programmes, both formal and informal, and encourages the development of lifelong learning in its member countries. In case of eLearning, OECD seeks to support those interested in introducing eLearning, particularly by reports and studies on this topic. The OECD also studies the progress and the efforts of countries implementing eGovernment and offers reports and papers on the topic of eGovernment and its impact in the future. (see <http://www.oecd.org>)

European Union

The European Union (EU) is interested in the support and development of information society. The scope of the action programme eEurope of the EU includes both eLearning and eGovernment. In eGovernment, EU seeks to enhance the European

as well as national offers. In eLearning, the main concern is the increased accessibility of education, with the help of information and communication technologies. (see <http://europa.eu.int>)

Government

Through the influence of international organisations like the EU and the OECD, many countries, particularly in Europe, are interested in the discussed topics. There are many governmental projects in eGovernment and almost every country has developed its own action plan, describing the implementation of eGovernment. Similarly, there are programmes concerned with lifelong learning and eLearning. The interest in eLearning has faded slightly, as many projects have fallen short of expectations. However, there are still attempts, for instance in higher education, focused on increasing access to education and cutting costs.

Municipality (as an institution)

Many municipalities take interest in eGovernment. It is common practice, to create a plan, that describes the process of introduction of eGovernment. There are also numerous examples of cooperation between municipalities (or other institutions of public administration) and universities, mainly on research level (e.g. Online-Rathaus project of municipality Dresden, Germany and University of Technology Dresden, Regio@KomM project of Münsterland, Germany and Westfälische Wilhelms-Universität Münster).

Just like any other institution, municipalities are also in need of training for their employees. Although the classical forms of education are still the main source of education for officials, new methods, like eLearning and blended learning are also of interest. Some municipalities have therefore engaged in eLearning projects. The eLearning offers are usually concerned mainly with public administration, but also with eGovernment (e.g. prodela transfer project, WebTrain project).

2.2.7 Other Private Stakeholders

In the previous sections, students and adult officials were described as main focus groups of the integrative eGovernment education. Likewise, universities and municipalities are seen as main responsible organisations. However, it is well possible that other individuals and organisation want to participate in the approach.

Citizens

The plans of international organisations and governments hope to introduce eGovernment into the everyday life. For the citizen, in their private or working lives, this can

mean new opportunities but also changes. To handle eGovernment and profit from it may require new skills, particularly in the dealing with new media. Citizens also have questions and concerns, they would like to have answered (e.g. security). These new needs of the population call for public education in eGovernment. The qualification approach, discussed in this thesis, is focused on individuals, who see eGovernment as a part of their career. It is therefore in essence unsuitable for education of citizens, whose point of view is mainly that of a user. However, it would be possible, to include single informative courses for the citizens in the qualification curriculum, for the purpose of confronting the future eGovernment “experts” with opinions and possible fears of the citizens. As one aspect of eGovernment is service to the community, it is essential, that their views are not overlooked.

This thesis has chosen officials and employees of municipalities as a main focus group. However, the integrative approach to eGovernment is potentially interesting to individuals from other professions (e.g. consultants, software-engineering). It is the opinion of the author, that cooperation with interested learners from other organisations can be incorporated into the design, without further difficulties.

Companies

Similar to the citizens, companies, different from the municipalities, can have two form of interest in eGovernment education. Firstly, they can feel the necessity, to inform themselves about eGovernment and explore its opportunities in their business. This reason is not conform with the purpose of the qualification approach in this thesis. But including such session in the education can profit the community, while broadening the views of the qualification learners. Secondly, companies whose business is related to eGovernment, can wish to participate as an organisation responsible for the education, with the objective to improve the background knowledge and abilities of their own employees.

2.3 Educational Requirements

The qualification approach aims to provide integrative education suitable for eGovernment. Besides concentrating on the stakeholders’ goals, the educational requirements also have to be taken into account. The following sections will first describe the biological fundamentals of learning (see section 2.3.1) and then introduce the pedagogical framework of the educational design (see section 2.3.2). The key elements of the framework are lifelong learning (see section 2.3.4), experiential learning (see section 2.3.3), networked learning (see section 2.3.5) and blended learning (see section 2.3.6).

2.3.1 Biological fundamentals

Human learning is closely associated with memory. There are two types of models, that attempt to describe, how human memory works. The *multi-store model* is currently most widely accepted. This model suggests, that storing of information occurs in several stages. The number of these stages and their type can differ. Generally, it is assumed, that the first stage is a so called *sensory store* or *ultra short term memory*, that retains sensory images. These images last only a small part of a second and are lost, if left unprocessed. Processed sensory data is moved to the *short term memory*. There is a dispute, concerning the storage time in the short term memory. Suggestions range from ten seconds to several minutes. Once the information from the short term memory is dealt with, it is moved to *long term memory* or else lost. The long term memory contains all information, collected over the life-time of the individual. Some author also include a so called *working memory*, which is placed between the short term and long term memory and represents the conscious processing of information. Also, some authors subdivide the long term memory, for example in semantic (stores knowledge) and episodic (stores experience) or verbal (stores information) and iconic (stores pictures). (comp. [*Fric+06], pp. 3-4; [Homb+03], pp. 41-42; [Seel00], pp. 38-43)

Single-store models were inspired by neural networks and theories from neurobiology. They assume, that humans have but a single memory, that contains all information as well as sensory data. The different levels of information processing, known from the multi-store models (sensory store, short term memory, long term memory) are believed to be temporary activation states. This theory suggests, that the quality of information storage depends on the depth of information processing. To remember a particular topic in detail, it is necessary to deal intensively with the information. For the recognition of the topic, only superficial handling is needed. ([Seel00], pp. 38-43) Essentially, both theories agree, that there are different levels of information storage and that these levels are affected by the depth of the interaction with the information.

2.3.2 Pedagogical Framework

Section 2.1.3 identifies three needs of integrative eGovernment education. These are practical experience, further education for adult learners and international cooperation (see fig. 2.3).

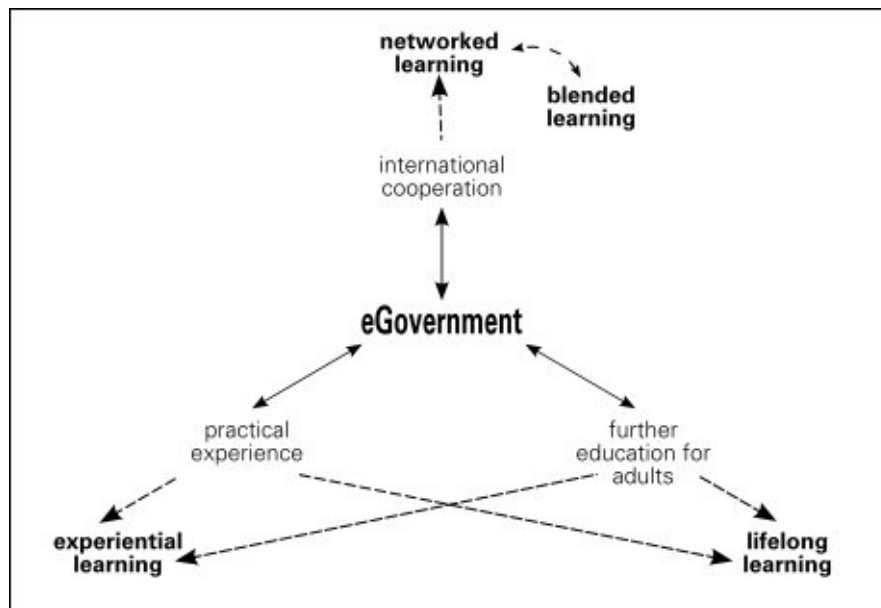


Fig. 2.5: Pedagogical framework of the thesis

Based on these three needs, the appropriate pedagogical areas of interest can be derived (see fig. 2.5). Firstly, in order to bring practical experience into the qualification, the educational design employs the theory of experiential learning (see section 2.3.3). Secondly, to satisfy the special needs of adult learners and to promote learning among the students, the approach is based on the principles of lifelong learning (see section 2.3.4). And thirdly, to bridge the time and place differences with international partners, networked learning (see section 2.3.5) and blended learning (see section 2.3.6) are used.

2.3.3 Experiential Learning

Attending formal education also implies participating in a “learning world”, that is frequently very different from the real world. It is comprised of learning material, agendas and examinations, success and failure are defined in form of grades. Whereas for instructors these components may be only means for the actual knowledge transfer, for the learners, particularly for students who often come freshly from even more sterile “school worlds”, this world is the reality ([Wuen72], p. 59). To prevent such perception (learning for learning’s sake), it is necessary to create a connection between the learning and the real world, by allowing the learners to create experience which is not concerned with the learning itself, but with the content.

Connecting learning to reality means opening up of the learning processes to the real world. This is particularly important for the motivation of adult learners, to whom education with no association to reality may seem worthless. RAMSEGER identifies three dimensions of openness. These are the **openness of content**, meaning that

content has to be linked to the reality, the **openness of methods**, which suggest including experience and reality in teaching techniques and lastly the **openness of the institution**, meaning the acceptance of reality outside the educational institutions. ([Rams92], pp. 24-26) Providing these three dimensions will allow learners to experience the content of the qualification. But to profit from the experience, learners have to take time to deal in depth with what they have learnt or done (comp. [Dewe⁺00], pp. 186-218; [Schne87], pp. 53-54). Such revision is not always natural to the learners and needs to be initiated by the instructors.

The experiential approach does not imply, that no theory is allowed to be taught. This would be impossible in many subjects. Rather, the learners have to understand the practical reason for learning the theory and as often as possible, have to have the opportunity to experience such connection actively. The purpose of eGovernment, that is to support public administration with the help of information and communication technologies (ICT), provides direct link to the practice and this link has to be actively included in the eGovernment education.

2.3.4 Lifelong Learning

The term “lifelong learning” or “lifelong learning for all” belongs for over a decade to popular catchwords in pedagogy. The concept has successfully found its way into educational programmes of the EU as well as the OECD and belongs to educational policies of many countries worldwide. There are however many different interpretations of lifelong learning, although the term seems rather self-explanatory. This can be particularly well observed when comparing the reports of countries participating in OECD’s lifelong learning activities. The understanding of lifelong learning application ranges from simple involvement in adult education to complex schemes concerned with the improvement of the whole society ([OECD00], pp. 11-16). OECD itself provides a very holistic definition of lifelong learning, seeing it as a “cradle-to-grave” educational concept, concerned with all conscious learning activities undertaken throughout an individuals life ([*Behr⁺03]), p. 7; [OECD96], p. 89). The definition covers formal as well as informal education.

The OECD sees following strategic goals for lifelong learning ([OECD96], p. 95):

- enlarging access to high-quality early childhood education,
- revitalising foundation learning in primary and secondary schools,
- overcoming problems of transition from education to work,
- encouraging adult learning,

- addressing the lack of coherence in the system and
- renewing the resources and “assets” of the system.

Compared to lifelong learning, there is another pedagogical approach, called “recurring education”. The concept of recurring education suggests, that adults should learn throughout their lives, as opposed to a concentration of education only in childhood and early adulthood ([OECD96], p. 88). At the first glance, recurring education may appear rather similar to lifelong learning. The main difference is in the acceptance of informal education. Whereas recurring education concentrates only on formal educational offers, lifelong learning includes any form of learning and is therefore much broader.

Based on the OECD understanding, an eGovernment qualification approach, which seeks to enforce principles of lifelong learning, has to promote the idea of unceasing learning throughout the lifespan. Offering an integrative education, that includes both students and adults, can be strongly supportive for this aim. The students are brought into an environment, where adult learning is perceived as a norm. This can later motivate the students to participate in similar educational offers themselves. The adults, on the other hand, are confronted with a social system, where learning is understood as an important assignment. Adult learners often see their jobs as their primary task and learning takes only a supportive role ([Long98], p. 33). Being confronted with settings, where learning itself is of great importance, although it does not always have direct connection to the practice, may lead the adult learners to rethink their opinion of learning. Further, an atmosphere should be created, which supports spontaneous, learner-initiated learning throughout the qualification as well as after the qualification is over. A lifelong learning oriented qualification approach should also combine theoretical as well as practical elements. While offering a theoretical foundation, practical experience is necessary to emphasize a connection between the education and working practice.

2.3.5 Networked Learning

Networked learning is defined as learning, that uses ICT to promote connection. These connections can occur among the learners, between the learners and the instructor or, in a wider definition of networked learning, also between the learning community and its resources ([Good05], pp. 82-83, [Good⁺04], pp. 1-2). This definition places networked learning in the area of Electronic Learning (eLearning). But whereas eLearning is concerned with the support of the whole learning process with ICT (comp. [Lies05],p. 13), networked learning focuses only on the connectivity. Networked learning thus promotes

the social aspect of learning, which plays particularly important role in international cooperation.

Enabling the cooperation with international partners throughout the learning process can be very difficult. Even if the interpersonal, inter-cultural and language issues are excluded, there are still many practical problems. Firstly, the participants can be divided by considerable distances. Secondly, time synchronisation can also cause substantial problems, due to for instance different time zones, time habits or working patterns. Networked learning can be used to surpass these differences, for example by creating common virtual environment, where the learners and the instructors can meet (synchronously or asynchronously) and collaborate.

Such virtual environment does not have to be limited to international cooperation. The collaboration of students and adult learners can also cause problems, especially because adult learners tend to have different working patterns and time organisation. Networked learning is therefore supportive for the integrative eGovernment education in general. The use of networked learning also promotes media literacy, which has a positive effect on the eGovernment education itself, as eGovernment has a considerable connection to ICT.

2.3.6 Blended Learning

The above section has described the advantages of networked learning in integrative eGovernment education. Many of them can be also applied for eLearning (i.e. time and space flexibility). However, this should not suggest, that networked learning and eLearning are the only suitable methods. Nor are they believed to be the generally best methods. In different situations, other methods will prove to be more appropriate. In order to provide best possible environment for the learners, it is essential to combine the learning methods, so that the most suitable methods can be used in particular learning arrangements. This approach is known as blended learning. (comp [Kroe⁺04], pp. 23-25)

2.4 Other Requirements

Besides considering the stakeholders of the qualification and the didactical requirements, there are also prerequisites of a more practical kind. These are concerned with the technical equipment, that is necessary for the qualification, and with the communication with foreign partners.

2.4.1 Technical Requirement

Offering education for adult learners, students and international learners requires a high level of flexibility. It is likely to be difficult to organise for all involved learners to meet on a single place in particular time. The use of ICT can greatly increase the flexibility of education. However, it also poses requirements on the participants. Firstly, they have to be equipped with proper hardware and software. Secondly, the handling of these technologies requires a certain level of media literacy. It is therefore necessary, to make sure, that the learners have access to appropriate media and that they can use them. Problems with the handling of the hardware or software can be relieved through courses before the beginning of the qualification or by including the acquisition of such skills in the qualification content.

2.4.2 Language Requirements

Education, that includes international cooperation among the responsible organisations and/or among the learners can potentially lead to language problems. Long term cooperation is only possible, if the participants have at least one common language of communication. Learners, instructors and individuals responsible for the creation of the educational design, need a good command of this language. At the moment, English is the most widely spoken (foreign) language and particularly in Europe, it is also the most likely language of communication.

If a long term cooperation among the learners is planned in the design and particularly if mobility of the learners is intended, including language education in the qualification needs to be considered. Firstly, if learners are required to reside over a longer period of time in the partner country, knowledge of the country language can contribute substantially to a problem-free stay. Secondly, frequent interaction with learners with different mother tongue offers an excellent opportunity to master a new language on a high level of proficiency. Such chance has to be promoted and communicated to the learners.

2.5 Requirements of the Educational Design

Under the consideration of the above described stakeholders, educational requirements and other requirements, the educational design of an integrative eGovernment qualification approach is to be based on the following criteria:

- regard to different learner groups (students, adult learners, international learners),
- consideration for a variety of learning styles and learning views,
- teaching of eGovernment specific knowledge and skills,
- promotion of practical experience in the qualification,
- teaching of higher order thinking skills,
- support of personal development,
- teaching and promotion of learning skills,
- motivation to further self-directed education,
- teaching of cross cultural skills,
- promotion of international cooperation among the learners and
- education and promotion of language skills.

3 Educational Design

This chapter represents the core of the thesis. It aims to provide a model to support educators in eGovernment education. First, the theoretical background of the concept will be introduced (see section 3.1). As the pedagogical theories - *lifelong learning*, *experiential learning* and *networked* or *blended learning* - have already been discussed (see section 2.3), mainly the theory behind the chosen model design will be explained. Section 3.2 deals with content, that would be suitable for the curricula of an integrative eGovernment approach. Finally, section 3.3 introduces and discusses an educational design model, which serves as a tool for designing and implementing eGovernment qualifications.

3.1 Theoretical Background

This section provides theoretical background for the model design technique used in this thesis. The purpose of chapter 3 is to provide a suitable model to support educators. There are many techniques available, when choosing to create a model. To provide a flexible and yet a clear model, the Alexandrian pattern approach has been chosen.

3.1.1 Patterns

The idea of *patterns* dates back to the 1970s. It is attributed to CHRISTOPHER ALEXANDER, who has first used it in architecture. ALEXANDER defines them as “a unitary pattern of activity and space, which repeats itself over and over again, in any given place, always appearing each time in a slightly different manifestation” ([Alex79], p. 181). ALEXANDER believes, that these recurring phenomena can be captured and described as systems of forces in a particular context. Furthermore, it is possible to portray a solution, which resolves the forces and which can be used repeatedly in any similar situation.

ALEXANDER stresses the fact, that using the same patterns does not result in creating identical architecture. This, for one, lies in the Alexandrian formulation of pattern solutions, which tend to be guidelines, more than instructions. Moreover, the situation, in which a pattern occurs, almost never repeats itself in exactly the same way. Though there may be similarities, which allow the use of one solution, two contexts will never be identical. Since patterns interact with their context, the results will always be unique. To illustrate this, Alexander uses the SUNNY SPOT pattern, which calls for the creation of a warm, sunny place close to a house. In a row of houses, all facing south, this pattern will result in several more or less similar spots in front of the house. But for a house, which is situated in a different area, facing different direction, maybe

having a different garden architecture, SUNNY SPOT will create a completely different place. ([Alex79], pp. 147-151)

In order to share an Alexandrian pattern with someone else, it has to consist of three parts ([Alex79], pp. 249-253):

1. Context description
2. System of forces
3. Solution, resolving the forces

Additionally, every pattern has to have a name, that can be used, when describing the pattern. In written form, pattern names are written in upper case.

Later on, in 1990s, the pattern approach has been transferred from architecture to object-oriented software engineering by ERICH GAMMA. GAMMA uses the term “design patterns”, which he defines as “descriptions of communicating objects and classes that are customised to solve a general design problem” ([Gamm⁺95], p. 2). A design pattern consists of ([Gamm⁺95], pp. 3-4):

1. Name
2. Problem description
3. Solution
4. Consequences

After being used in software engineering, patterns have also been employed in other areas, pedagogy being one of them. Originally, patterns have been brought into the educational context by software engineering teachers ([Good05], pp. 86-87).

Although the idea of patterns has been used in different areas, there are several attributes, all patterns share.

- Pattern **names** tend to be evocative. Often, they describe the solution or the problem. Sometimes a metaphor is used. This is to enable the readers to pick the essence of the pattern quickly. Patterns often occur in catalogues, so the readers have to be able to quickly find patterns necessary for them. Besides, the readers should be able to memorise the name easily, in order to use it in conversation. (comp. [*Mesz⁺06])

- Even though there are many ways of presenting a pattern, they are always **well structured**. This approach goes back to ALEXANDER, who wanted to offer easy-to-use and easy-to-understand patterns for general public (comp. [Good05], p. 86). Today's patterns are often meant for experts, nevertheless, even they have to read patterns easily and quickly. Usually, patterns consist of several parts, which always appear in the same order and are clearly visually separated.
- Mostly, patterns contain at least the three structural components: context, forces and solution, which are derived from the Alexandrian original. Often, further parts are also included. These can be e.g. rationale, examples, discussion, consequences, connections to other patterns etc.

3.1.2 Pattern Language

According to ALEXANDER, patterns can occur in different sizes, concerned with different level of detail. He explains, that just as ocean waves have their patterns, so do the droplets of water contained in them ([Alex79], pp. 144-146). These patterns are not separated from each other - on the contrary, they interact and influence each other. Hence, when using patterns to create a more complex construct (e.g. a house), a whole set of patterns will be used. This set will follow a certain structure. ALEXANDER defines this structure as a *pattern language*. This language can be compared to natural languages (comp. [Alex79], p. 187):

Tab. 3.1: Pattern Languages and Natural Languages

Natural Languages	Pattern Languages
Words	Patterns
Grammar	Patterns (specifying connections between other patterns)
Sentences	Sub-languages (referring to smaller constructs)

Usually, the structure of the pattern language starts with large patterns and moves towards smaller ones. To use an example from architecture, one would start by creating the overall look of a building, then move on to design a room and later concern himself with the look of a fire place in that room. This top-down approach makes sure, that the outcomes, which follow, when a single pattern is employed, do not exist separately

from each other, but fit into a common context. This way, the end result is complete and whole in itself.

In the context of pedagogical patterns, a pattern language is a set of patterns, concerned with the solution a complex problem or with the creation of a complex construct. Often, this problem or construct contains several smaller areas. It is then possible, to create sub-languages, which refer to these areas.

3.2 Content of the Qualification

This section deals with the content of an integrative eGovernment qualification. This thesis is mainly concerned with the design of a qualification. The content therefore cannot be covered in detail. Nevertheless, the topics, suitable for the qualification, will be stated and discussed.

Based on the description from section 2.1.2, eGovernment is placed between the fields of public administration, business administration, business informatics and social disciplines like pedagogy, psychology and sociology (see fig. 2.2). Knowledge and experience from these fields should therefore figure in an eGovernment education. An integrative approach, which unites students, adults and international learners, calls for further subject areas and simultaneously opens opportunities for learning of new skills, particularly of interpersonal kind.

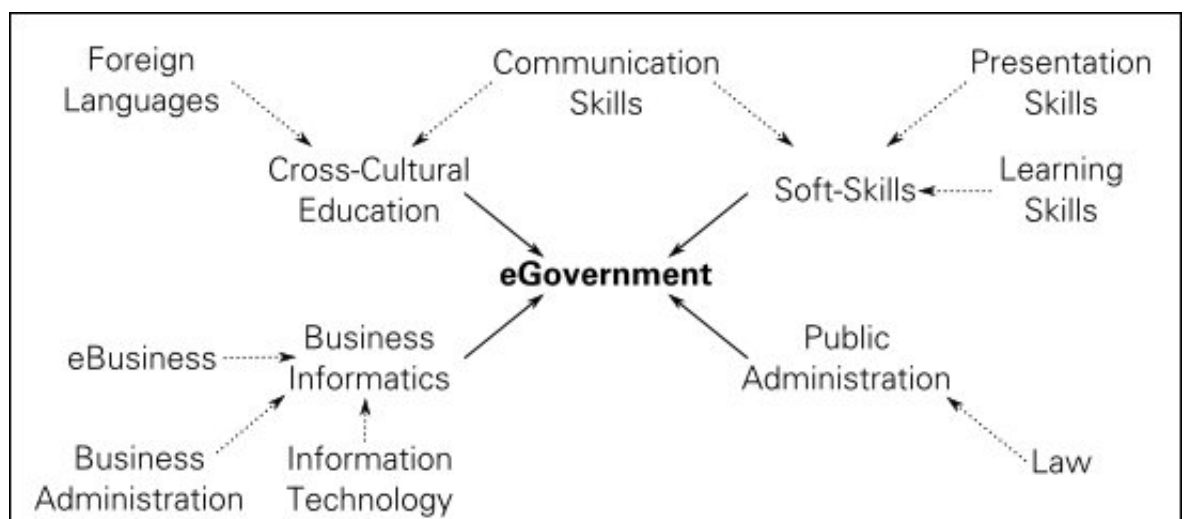


Fig. 3.1: Curriculum framework

Therefore four main topic areas of integrative eGovernment education are identified (see fig. 3.1). These are business informatics (see section 3.2.1), public administration (see section 3.2.2), eGovernment itself (see section 3.2.3), cross cultural education (see

section 3.2.4) and a set of abilities summed up as soft-skills (see section 3.2.5). Each of them introduces several related sub-topics. These will be discussed in detail in following sections. The choice of sub-topics should not be perceived as prescriptive to the designer, it is furthermore a suggestion.

Not every eGovernment qualification, based on the integrative approach, has to contain all five topics. Depending on the context, the learners and the aims of the qualification, only certain topics or their parts can be chosen. However, it is the opinion of the author, that each of these topics contributes substantially toward the topic of eGovernment or is important in integrative education. Omitting any of the subjects has to be based on careful consideration of learners' background and their needs.

3.2.1 Business Informatics

As explained in section 2.1.1, BI is a very large area with many application possibilities. There is therefore a great pool of topics for education. These topics should not be chosen independently, but in association to the eGovernment and business administration subjects. This thesis suggest following areas for eGovernment education:

- process management and process orientation, including process modelling,
- document and content management and
- information management, including understanding of databases.

eBusiness

The methods and solutions used in eBusiness often cannot be identically used in eGovernment. There are however still similarities. Education in eBusiness and eCommerce supports the understanding of the learners for the use of ICT in organisation, communication and process management. It also has a positive effect on creativity, which often suffers under the restrictions of eGovernment.

Information Technology

The knowledge of IT can have diverse significance for different groups of learners. It is therefore sensible to offer several courses or modules, each with different aims. But as IT and ICT are important components of eGovernment, all learners need at least a basic knowledge in following topics:

- present day hardware (PC, Server) and their functionality,
- internet technologies and
- security.

Besides theoretical knowledge, learners should also acquire basic skills.

Business Administration

Because some techniques from the public sector have already found their way into the public area, it is recommended to include business administration education in the qualification, either as a part of business informatics or as an independent subject. The choice of relevant topics depends on the content of public administration and eGovernment taught in the qualification. This thesis identifies following topics as potentially interesting:

- finance and investment, relevant particularly in eGovernment projects,
- controlling, especially process controlling,
- basic knowledge in statistics and econometrics, as surveys are often a part of eGovernment projects and
- organisation.

3.2.2 Public Administration

eGovernment is very closely related to public administration. For learners taking part in eGovernment education, it is necessary to understand public administration and its basic principles. The learners may however have (or feel they have) diverse needs concerning the depth of eGovernment education. When designing an integrative eGovernment education, these differences have to be taken into account. Either the learners are allowed to pursue different courses or modules in public administration or they have to understand, why they are asked to participate in public administration education contrary to their (perceived) needs.

All learners have to master at least basic knowledge and understanding of following topics (comp. [Kulb⁺94]; [Ortm94]):

- legal and social foundation of public administration,
- finance issues in public administration,

- legal control of the administration,
- rights of the citizens,
- organisation of institutions of public administration and
- infrastructure of public administration.

Law

The foundation of public administration is given mainly by laws of a particular country, country region or international community. Similarly, the rights and duties of citizens are also prescribed by law. Such exact regulation poses a number of restrictions, legal education is therefore of vital importance in public administration and has to be included in integrative eGovernment education.

As legal regulations are often country-specific, the organisation of international cooperation in public administration has to be carefully considered. Through the influence of international communities (particularly EU), many countries have similar regulation, even these are however seldom identical. International education in public administration can provide overview over the international regulations and country difference, with focus on a few countries of interest.

3.2.3 eGovernment

The education in eGovernment has to concentrate on the application of knowledge from the above area in the public administration settings. The learners have to have the opportunity of practical or practice-like experience with eGovernment projects. This way, the restrictions and peculiarities of eGovernment, compared to other areas (e.g. eBusiness), can be called to their attention. They also have to understand the characteristics, which are unique to eGovernment and public administration (e.g. heterogeneous clientele, equal opportunities for all customers without the opportunity to choose “interesting” segments, monopoly position) (comp. [Brue⁺02]).

3.2.4 Cross Cultural Education

The international cooperation, that is included in the integrative approach implies, that the learners, the instructors and individuals participating in the design, will be in close contact to people with different cultural background. In order to prevent problems and enrich the learners’ cultural awareness, cross cultural education has to be included in the curriculum.

Perception

Individuals communicate with the environment with the help of sensory images. Because human mind is incapable of handling all these images, only the important ones are chosen for further processing. The selection process behind the choice is strongly influenced by the background of the individuals and therefore also by their culture. This leads to diverse perceptions among individuals from different cultures and can be a source of misunderstandings and problems. Further, human mind uses categorising to simplify the perception process. In the cultural context, this can lead to stereotyping, if the categorising is confused with reality. ([Hoop79], pp. 13-16) This problem has to be explained to the learner, together with demonstration of deceptiveness of ones perceptions (comp. [Hoop⁺79], pp. 109-113).

Cultural Self-Awareness

The above described problems caused by culturally biased perception can not be prevented, unless the individuals are aware of them. However, as the selective perception occurs on subconscious level, it is very difficult to influence. This cultural bias can only be reduced through learning, never eliminated. ([Hoop79], pp. 16-22) Educational means of increasing cultural awareness concentrate mainly on self-exploration and self-assessment (comp. [Hoop⁺79], pp. 114-127).

Values

Values can be divided into four groups: form of activity, form of social relations, perception of the world and perception of self and of the individual. Although not all individuals in one culture share the same values, certain values will dominate. Values are based on beliefs and can be either conscious (e.g. political, religious values) or subconscious. As with the perception, the subconscious values can cause more difficulties in inter-cultural relations because they are not easily accessible. ([Hoop79], pp. 25-28) Similarly, education aims to deepen the awareness and understanding of own values as well as openness towards different values (comp. [Hoop⁺79], pp. 128-153).

Communication

Communication can be defined as sending messages from a source to a receiver and the interpretation of these messages. There is a very close connection between communication and culture. In fact, as culture is defined mainly by interaction and relationships (e.g. male-female, old-young, individual-environment), it could be said, that culture itself is a particular form of communication. Communication difficulties can arise due to differences in customary behaviour, cultural assumptions and values, patterns of

thinking and communication style, all of which influence the understanding of sent messages. Whereas communication in general is based on similarities (so that the message can be interpreted in the same way), inter-cultural communication is based on differences and the awareness of them. Skills necessary for inter-cultural communication include listening, perception control, seeking feedback, resisting judgemental reactions, cultivating self-awareness and taking risks. ([Hoop79], pp. 29-36; [Hoop⁺79], pp. 154-172)

Foreign Languages

Just as there is a close connection between communication and culture, the cultural settings influence the language. To know the culture, it is therefore important, sometimes essential, to know the language. The language mirrors human relations and the views of the environment. ([Hinz94], pp. 49-55) Besides, communication is practically impossible without common language. Including language education in integrative education improves the communication among the learners and the international participants. Besides, the learnt language remains a very important asset after the completion of the education, in the private as well as in the professional life of the learners.

3.2.5 Soft-Skills

Besides acquiring knowledge and skills in the above introduced disciplines, the learners need to have also certain discipline-independent abilities to use in their later day-to-day life and work. These abilities are commonly called soft-skills and are often focused mainly on interpersonal contacts. Particularly relevant for eGovernment are communication skills, presentation skills and learning skills. However, further skills can be included if necessary.

Communication Skills

In section 3.2.4, communication is defined as a process of sending messages from a source to a receiver and their interpretation. Accordingly, communication skills have to cover the learners' role as a sender as well as a receiver. The learners have to be capable of expressing themselves comprehensibly, with both verbal and non-verbal elements. They also have to learn to listen and interpret the received messages correctly, again, based on both verbal and non-verbal signals from the sender.

Presentation Skills

Presentation skills are important in eGovernment, as it often has a project character. It is common in a project to present ideas and results. The presentation technique

can greatly affect the perception of the content. The learners should master basic presentation skills, including the verbal presentation, as well as correct use of media.

Learning Skills

Learning skills are necessary for promotion of lifelong learning. If the learners are expected and encouraged to include learning in the future and to participate in informal learning settings, they have to understand the learning processes and know, how to direct and manage them. Also, particularly higher education expects the ability of self-directed learning. This, however, does not have to be natural to the learners and needs to be further cultivated. The learning skills, therefore, must not be focused on the qualification methods and content only, but have to further serve the learner after the completion of the qualification.

3.3 Educational Design Model

The core aim of this thesis is to offer an educational design, suitable for supporting an integrative eGovernment education. This section introduces a model, that represents the design process and offers assistance at all of its stages.

The main focus group of the following model are designers, responsible for the creation of an integrative eGovernment qualification. It has been taken into account, that more than one person is usually in charge of creating a qualification. In fact, several hierarchy levels of an organisation offering such qualification (university, municipality) are often concerned, usually at different stages of the design. The participants do not necessarily possess knowledge of pedagogical methods and theories. It has been likewise considered, that there is an abundance of possible qualification forms, ranging from classical programmes of study (university) to a set of workshops or seminars (adult training).

In order to offer flexibility, necessary for meeting the above mentioned criteria, the suggested educational design leans heavily on the principles of patterns (see section 3.1). Education is a very broad area, with great variety of methods and theories, which should lead to successful learning. For an educator, who does not possess pedagogical background knowledge, choice of the “right” theory or method, is often highly subjective. It is frequently derived from techniques, that are usually used by other educators in similar situations. Besides, the educator has mostly formed his or her own opinion about “good” and “bad” teaching, based on his or her own experience as a learner. An educational design model should therefore not seek to provide a set of rigid instructions. Such a model would run a risk of being dropped completely, when

its theories do not match the educators opinion. For this reason, this thesis uses the pattern approach, as patterns (of Alexandrian art) aim to provide general guidelines and inspiration, rather than actual rules. Thus, help can be offered to the educator in question, without robbing him or her of the opportunity, to let his or her own ideas and opinions influence the teaching techniques used.

The structure of patterns in this thesis is based on patterns of the Pedagogical Patterns Project (see www.pedagogicalpatterns.org). To increase the clarity, Information Mapping[®] is used. The patterns are presented in following format:

PATTERN NAME

Context	Describes the context in which the problem occurs.
---------	--

Forces	<ul style="list-style-type: none">• Here are the forces enumerated, that occur in the problem.• To make the single forces more visible, a bullet list is used.
--------	---

Solution	Resolves the forces of the problem. The essential points are written in bold case , to make the reading easier.
----------	--

Discussion	Discussion of the practical use of the pattern, possible problems, consequences etc.
------------	--

References	See also: Refers to related patterns from the same pattern language. Compare: Refers to related patterns, that can be found in other pattern languages, with appropriate reference. Compare further: Refers to related literature.
------------	--

However, the use of patterns, though highly flexible, may appear confusing to a potential user. The model, therefore, besides describing a suitable pattern language, also presents a structure, that can be easily understood and followed.

The following sections first describe an overall pattern language of an integrative eGovernment qualification (see section 3.3.1). Later on, a model is presented, which leads through the pattern language and also introduces its sub-languages (see sections 3.3.2-3.3.7).

3.3.1 Pattern Language of the QUALIFICATION APPROACH

In this section, a pattern language is presented, describing the field of designing an integrative education in eGovernment. The language contains several patterns arranged in Alexandrian fashion from the largest to the smallest one (see fig. 3.2). Each of these patterns represents a root to a sub-language. The largest pattern is a PROGRAMME OF STUDY, which can be further specified into MODULES. Each MODULE contains several COURSES. A COURSE is delivered in multiple LESSONS, each employing suitable PEDAGOGICAL TECHNIQUES.

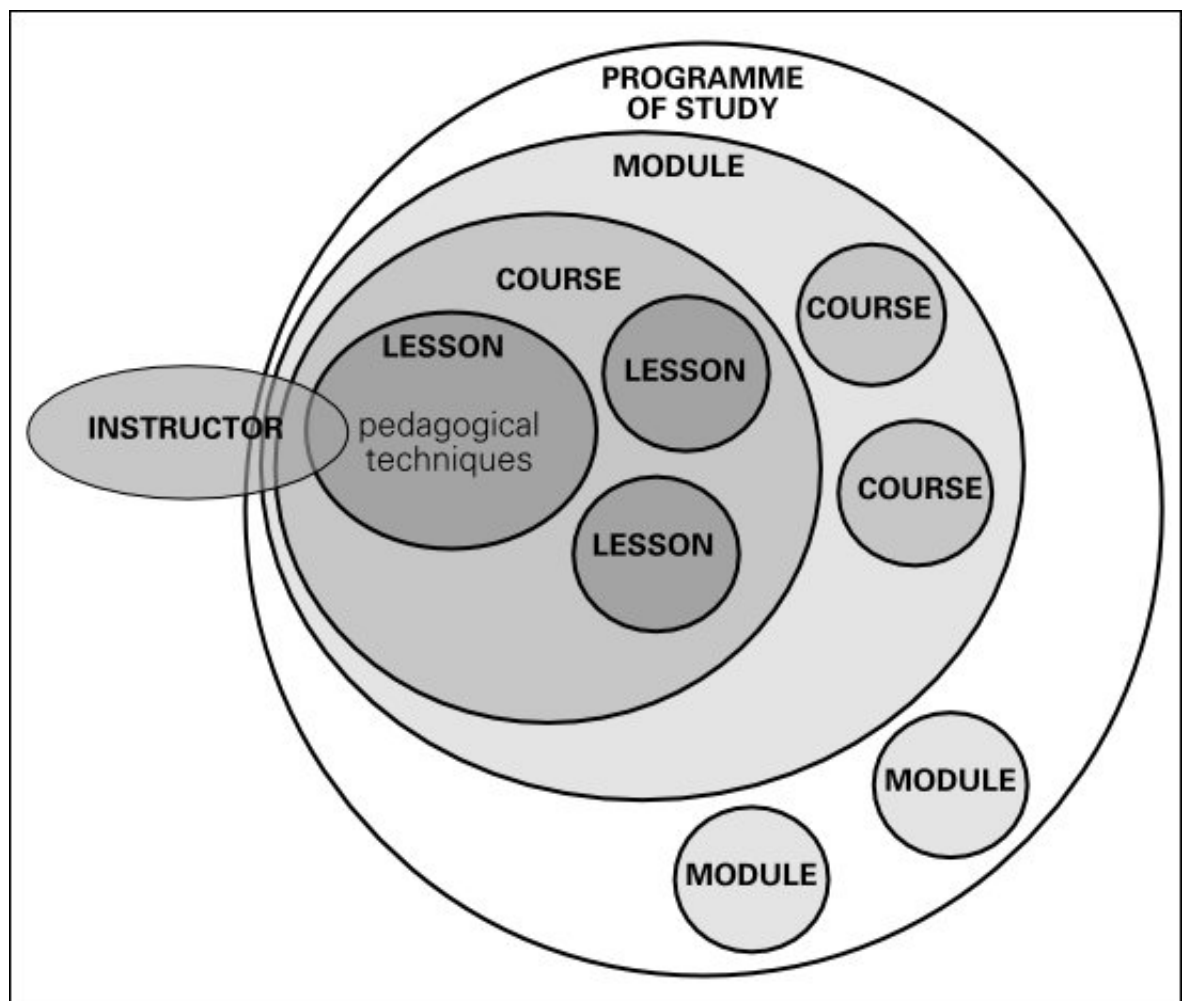


Fig. 3.2: Structure of the pattern language

The names, used to describe the patterns of the language, originate mainly from formal education. Although they may appear self-explanatory, they are often used and understood in a considerably different way. In the following, these terms will therefore be exactly defined and described, using the pattern-form.

PROGRAMME OF STUDY

Context A PROGRAMME OF STUDY is a closed educational unit, certified upon completion. It is concerned with a single area, though this area can be rather broad.

- Forces
- As a subject, eGovernment represents a vast educational area.
 - The studies should motivate the learners to educate themselves further in the future.
 - The learners need to see “a light” at the end of their education, which they can strive for.
 - To motivate the learners, the successful participation in an educational offer has to be in some way made visible to interested parties like (future) employers.
-

Solution **PROGRAMME OF STUDY is an in itself closed unit of education.** This does not mean, that the PROGRAMME OF STUDY has to cover the entire subject. It should rather provide the learner the impression, that he or she has a firm grounding in eGovernment (or a part of it, if that was the subject matter of the PROGRAMME OF STUDY).

Although the learners should have the confidence, to have learnt sufficient amount of eGovernment to use it in the practice, he or she **should be animated to acquire further knowledge.** A PROGRAMME OF STUDY can for this reason introduce certain specific areas of eGovernment and cover them only briefly, thus leaving it to the learners to deepen their knowledge in these areas on their own.

To further acknowledge the learners’ achievements and make them visible **the PROGRAMME OF STUDY has to be certified upon achievement** in such a form, which will be accepted by interested parties, like the employer, future employer or other educational authorities.

MODULE

Context Though a single closed unit, a PROGRAMME OF STUDY can consist of several areas, which are concerned with a different subject matter. It can be therefore useful, to divide the PROGRAMME OF STUDY into MODULEs, each concerned with a single topic.

- Forces**
- To simplify the orientation for the learner in the eGovernment PROGRAMME OF STUDY, the whole subject can be divided into smaller parts.
 - Learners like to have “milestones” in their education, so that they can see, what they have already achieved.
 - Learners, particularly adults, often like to have the choice, what they would like to learn, so that it fits their experience and interest.
 - The content of the single parts has to be concerned with a single subject matter.
 - It is highly likely, that some of the single parts will be closely connected.
 - Division based on topics can lead to loss of understanding of the connections among the topics.
-

Solution **Separate the PROGRAMME OF STUDY into smaller MODULEs, each concerned with a certain problem area.** A problem area can be thematically oriented (e.g. IT), but it can also comprise several subjects, concerned with the same problem (e.g. modelling). Make sure, that the selected problem areas cover the topics, originally selected for the PROGRAMME OF STUDY.

Choose MODULEs, that are big enough, so that the PROGRAMME OF STUDY is not divided into too many parts. This way, the learners can better understand the aim and the structure of the PROGRAMME OF STUDY, without losing overview. It also leaves enough freedom to design the content of the MODULEs themselves. **Be aware, that the MODULEs are connected.** Make these connections visible to the learners, so that they can relate knowledge from one MODULE to others.

Do not make all the MODULEs mandatory. If possible, let the learners have the possibility to choose, which of the offered MODULEs will be useful for them. **The completion of a MODULE should be acknowledged.** This can happen for instance in a form of certificate. The learner should be reminded, that he or she has successfully finished a part of the course.

COURSE

Context The subject matter chosen for a MODULE has to be further divided into even more specific COURSEs, in order to provide the learner with learnable portions.

- Forces
- Learners need smaller portions of educational material to learn.
 - eGovernment describes some complex and broad areas. Dividing them into parts and teaching them separately could impair the understanding of the whole.
 - A MODULE has a certain educational aim. Dividing the subject matter into parts could endanger the achievement of this goal.
 - Particularly adult learners have a different knowledge background. Some of the offered courses may not be interesting for them.
-

Solution **Identify the knowledge or abilities the learner need to understand and solve the problem area, a particular MODULE is concerned with.** Group them into logical clusters and teach the content of these clusters over a period of time. So created and taught COURSEs have to have a common aim: enabling the learners to handle the problem area of a MODULE.

The connections between COURSEs will be stronger than by MODULEs and have to be managed with particular care. They have to be actively integrated into the content and teaching process, in order to make sure, that the learner understands the complex problem area. The INSTRUCTORs should explicitly point out the connections and frequently remind the learners of the whole context.

Just like in the case of MODULEs, **do not make all the COURSEs in one MODULE mandatory.** Give the learners the opportunity to select topics, from a particular area of expertise, which interest or concern them. To control the workload of the learners, create a system (e.g. point system), which will make sure, that each learner has put in a certain amount of effort, to complete a MODULE.

LESSON

Context The content of a COURSE is taught to the learners over a period of time in smaller time units, LESSONs. It is in the LESSONs (whichever form they may adopt) where the learners are actually confronted with the content.

- Forces**
- The content of the course has to be divided among the LESSONs.
 - All the LESSONs combined have to point towards the COURSE aims.
 - Learners find it often easier to follow, when a content is taught in linear form.
 - More complex areas (particularly, those involving practical experience) cannot be taught linearly.
 - Single LESSONs tend to build on knowledge taught earlier.
 - The learners can pay attention only over a certain amount of time.
-

Solution Make a rough COURSE PLAN for your COURSE. **Divide the content into smaller parts, but do not forget to plan the connections as well.** Make sure, that there is a clear set of aims the LESSONs follow and pass these aims onto the learners. It will help them keep track of their progress.

Make sure, the learners understand the LESSON sequence. If possible, offer a linear COURSE PLAN. If it can not be done, call the context and its connections frequently to the attention of the learners. The COURSE PLAN can be a useful tool for this. **Use also repetition to remind the learners of what has already been done.** Not only will this help to build on this knowledge later, but the learners will also better understand, why they have had to learn this particular topic.

When planning the LESSONs, do not overestimate the concentration of your learners. It can be very hard to concentrate on a topic longer than 45 minutes. **Include breaks or activities, to “refresh” the learners.** These can be for instance games or group work (see PEDAGOGICAL TECHNIQUEs).

PEDAGOGICAL TECHNIQUE

Context In order to achieve the aims set by the COURSE PLAN, suitable means - PEDAGOGICAL TECHNIQUEs - have to be employed ([*Paul06]). These have to be carefully selected and matched with the needs of the INSTRUCTOR and the learners.

- Forces**
- There are different types of learners (adults, students), with different background and experience.
 - The aims can be of different types, therefore a variety of techniques is called for.
 - Throughout a single COURSE, different activities may be necessary.
 - Though some of the PEDAGOGICAL TECHNIQUEs can be suitable for the learners or the aim, they may not fit the INSTRUCTOR.
 - Some techniques may seem unusual to the learners or others.
-

Solution **Select the PEDAGOGICAL TECHNIQUEs based on the aims you have set for a COURSE and for particular LESSONs.** PEDAGOGICAL TECHNIQUEs should help you achieve these aims. Feel free to combine techniques or exchange them. You do not have to stick to just one technique throughout the whole COURSE. You can even introduce several PEDAGOGICAL TECHNIQUEs in a single LESSON. In this case, however, bear in mind, not to confuse the learners.

When deciding upon suitable techniques, **consider yourself and your learners likewise.** Given the participants, their learning habits and background, choose techniques, that will best convey your intentions. However, bear in mind to select techniques suitable for your learners, but which also correspond with your abilities and principles.

When using PEDAGOGICAL TECHNIQUEs, that may seem new or unusual to the learners or other interested parties (e.g. the employer), make sure to **explain the aims of the technique.** Relate to the COURSE PLAN and COURSE aims.

INSTRUCTOR

Context The INSTRUCTOR is a person responsible for teaching of skills and/or knowledge to the learners. In adult education, INSTRUCTORS usually possess a vast knowledge and experience of the subject they are asked to teach, but often only limited formal pedagogical background.

- Forces**
- The main task of an INSTRUCTOR is to pass his or her knowledge and experience onto the learner.
 - Pedagogical background of an INSTRUCTOR is not only of lower importance, but sometimes no criterion at all.
 - INSTRUCTORS build their own pedagogical strategies as they teach.
 - INSTRUCTORS often already possess opinions or principles concerning “correct” pedagogical strategies, based on their own experience as learners.
 - INSTRUCTORS often teach besides other duties and have little time to deepen their formal pedagogical knowledge.
-

Solution Although the knowledge is important, an INSTRUCTOR should be aware, that other topics, like the learners or pedagogical principles and methods, are of consequence as well. Therefore, take some time to **explore your own opinions and ideas on pedagogical background**. There are many tools in the literature (besides the model introduced in this thesis), which aim to support the INSTRUCTORS, while keeping the necessary time and effort to the minimum.

Be open to question your teaching techniques. Pedagogical methods and techniques can have a significant influence on the teaching and learning success. Therefore be ready to debate your methods or try out new ones. Discussion with learners is an important tool for this purpose.

The QUALIFICATION APPROACH pattern language consists of several sub-languages. Each of the above introduced patterns represents a root to a small area with its own pattern language - a structure of smaller patterns, concerned with this particular topic. Under this aspect, the whole pattern language, which in fig. 3.2 appeared rather straightforward, becomes considerably more complex. Therefore, in fig. 3.3 a procedure model is provided. This model illustrates the use of the pattern language, for the purpose of designing an integrative education in eGovernment. (A larger version of fig. 3.3 can be found in Appendix 1.)

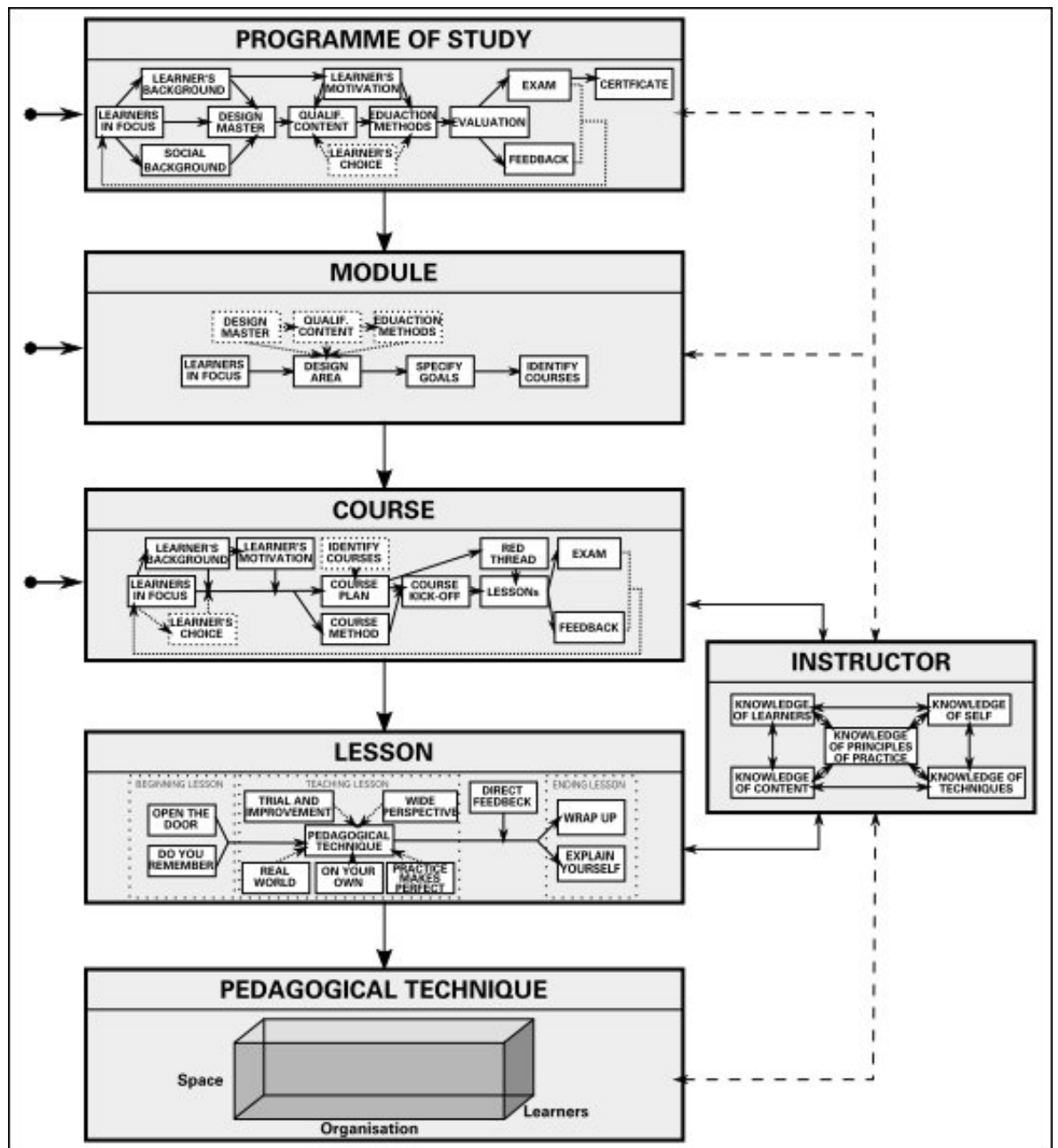


Fig. 3.3: Structure of the design model

The rectangles represent the superior patterns - PROGRAMME OF STUDY, MODULE, COURSE, LESSON, PEDAGOGICAL TECHNIQUE and INSTRUCTOR - that are also sub-languages. In them enclosed, are the patterns of these languages. These sub-languages and their patterns will be explained in sections 3.3.2- 3.3.7.

It has been stated before, that often several people are involved in a construction of a qualification. Often, different people are responsible for different stages. Looking at the model in 3.3, a person or a group with higher authority will make decisions on the creation of a PROGRAMME OF STUDY. They can further decide on the

design of the MODULEs or they may delegate this task. A further person (often the actual INSTRUCTOR) can be responsible for the design of the COURSEs and single LESSONs. Based on this assumption, the different designers might need only parts of the model. Therefore, the model identifies three possible starting points (in fig. 3.3 indicated with the arrows on the left), at which the model can be entered. These are PROGRAMME OF STUDY, MODULE and COURSE. It is assumed, however, that - although the model is being entered at a lower stage - the necessary decisions for the higher stages have already been made, though possibly by a different person. For instance an INSTRUCTOR can be responsible for planning an eGovernment COURSE. He or she enters the model at the COURSE-level, however, the COURSE is being offered as a part of a particular MODULE, where the criteria of the MODULE (such as aims) have already been set.

In the practice, the description of criteria in PROGRAMMEs OF STUDY and even MODULEs is often rather vague. Characteristics, especially aims and objectives, are frequently explained in general “mission statements” and do not fully match the criteria described in the model. The information from such “mission statements” should however still suffice for the use in lower stages.

The model does not foresee a starting point at the LESSON level. It is the opinion of the author, that to design LESSONs, the INSTRUCTOR has know the criteria set at the COURSE level. In comparison to PROGRAMME OF STUDY or MODULE, COURSE calls for rather specific decision like a COURSE PLAN or specific COURSE METHOD. Planning of LESSONs without the knowledge of these criteria could lead to confusion on the learners’ as well as on the INSTRUCTOR’s side. Potential inconsistency can endanger the fulfilment of aims or even imperil the whole learning process. This risk is seen as so high, that no entrance of the model at the LESSON level is permitted, unless the COURSE level has been designed.

The following sections describe the pattern sub-languages of all the levels of the pattern languages. The patterns will only be described in essence, without the use of the pattern form. A detailed description in pattern form can be found in Appendix 3. Furthermore, there are connections among the patterns. They can be linked to patterns, which are a part of the QUALIFICATION APPROACH pattern language, as well as to patterns created by other authors. Names of pattern, which can be found in this thesis, are stated in CAPITAL LETTERS. Other patterns are [placed in square brackets] and accompanied by a corresponding reference.

3.3.2 Pattern Language of a PROGRAMME OF STUDY

The pattern language of a PROGRAMME OF STUDY follows in its idea a modified didactical model of the Berlin school ([Lies05], pp. 7-8, comp. [Jank⁺91], p. 138). This model identifies two internal and four external variables. The external variables are individual prerequisites and social prerequisites, the internal variables are intention, content, learning environment and evaluation.

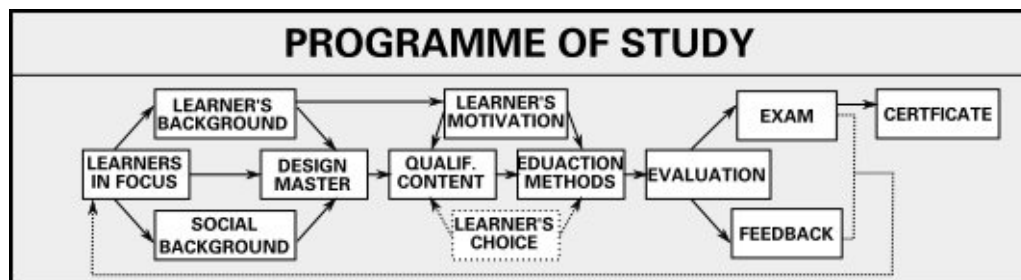


Fig. 3.4: Pattern language of a PROGRAMME OF STUDY

In the following pattern language (see fig. 3.4), the model is partially mirrored by suitable patterns and further accompanied by other patterns, that should help those responsible for the design of a PROGRAMME OF STUDY put the model ideas into practice.

LEARNERS IN FOCUS

Be clear, **who are the learners that participate in the PROGRAMME OF STUDY**. This is particularly important in this integrative approach as there can be different learner groups participating: **students, adults** and **international learners**. Decide, whether all participants share one PROGRAMME OF STUDY or if they each have an own PROGRAMME OF STUDY and “meet” on a lower level, for instance to participate together on a COURSE or even on a LESSON. In this case, decide on the primary LEARNERS IN FOCUS for this particular PROGRAMME OF STUDY, but also consider learners, who will join in later on.

See also: LEARNERS IN FOCUS in a MODULE

LEARNERS IN FOCUS in a COURSE

Compare: [Adapt to participants background] ([*Fric⁺06], p. 10)

Compare further: ([Long98], pp. 21-35)

LEARNER'S BACKGROUND

Once decided upon the LEARNERS IN FOCUS, you can **concentrate on the background, the learners come from**. LEARNER'S BACKGROUND includes infor-

mation like demographic data (i.e. age, mobility), professional knowledge (i.e. qualification, work experience), other knowledge (i.e. media skills, language skills) and motivation. **The findings from LEARNER'S BACKGROUND have to be taken into account in further design.**

See also: LEARNER'S BACKGROUND in a COURSE
Compare: [Adapt to participants background] ([*Fric+06], p. 10)
Compare further: ([Lies05], pp. 7-8, 18-19)

SOCIAL BACKGROUND

The SOCIAL BACKGROUND concentrates on **the condition, imposed on the PROGRAMME OF STUDY by the society, culture, law, labour market and participating organisations**. Every country has specific regulations for education. As the integrative approach seeks to accommodate adult learners as well as students, the study of applicable laws is of great importance. The situation on the labour market should be taken into account, with equal focus on current situation and future development. The participation of international learners calls for wider perspective on all social issues. SOCIAL BACKGROUND of the participants' countries, as well as of international communities (EU, OECD) has to be explored (i.e. currently the Bologna Process ([*EU06a])).

Compare further: ([Lies05], pp. 7-8, 9-18)

DESIGN MASTER

A DESIGN MASTER is a **(fictional) expert, who serves as a model for what the learners should be like, when leaving the PROGRAMME OF STUDY**. It is often difficult for the designers to set aims of a qualification. Creating a DESIGN MASTER makes this attempt more tangible. Besides, it resolves the dilemma between vocational education and personal development, mentioned in section 2.2.4. The DESIGN MASTER is a model person, which carries all those characteristics, that the learners should have, when leaving the qualification.

A DESIGN MASTER does not have to be based on a real person, though it is possible to use a real expert (or several) as a foundation. The characteristics can be of personal character (i.e. interpersonal-skills, critical approach to new information, open attitude to other cultures), they can be practical (i.e. presentation skills, language skills) or professional (i.e. programming skills, legal knowledge). The aim is then to support the development of these characteristics in the learners. The DESIGN MASTER helps to see the programme goals as an integrated system, rather than just a set of objectives,

because in the model expert, the characteristics will complement each other (e.g. language skills - knowledge and experience with different cultures - open attitude towards other cultures).

Compare further: ([Gilb76], pp. 29-54; [Murr⁺91], pp. 45-74)

LEARNER'S MOTIVATION

LEARNER'S MOTIVATION can be divided into two groups. Firstly, there is **an initial motivation, that the learners bring into the PROGRAMME OF STUDY**. This form of motivation should be identified, when exploring the LEARNER'S BACKGROUND. Initial motivation is important because it reveals the expectations the learners have of the PROGRAMME OF STUDY and allows predictions, concerning their behaviour throughout the qualification. It can be used as a foundation for the external motivation. **External motivation is created or influenced by the PROGRAMME OF STUDY**. If the initial motivation is insufficient or unsuitable, it can be changed or enhanced by the external motivation. (Compare also with intrinsic and extrinsic motivation.)¹

See also: LEARNER'S MOTIVATION in a COURSE
LEARNER'S CHOICE

Compare further: ([Wlod98], pp. 91-125)

LEARNER'S CHOICE

Learners, adult learners in particular, wish to be in charge of their education ([Shys00], p. 837; comp. [Know80]; [Maru93]). **If possible, therefore, the learners should be included - at least partially - in the design of the PROGRAMME OF STUDY**. They can, for instance, participate in decisions concerning the QUALIFICATION CONTENT, the creation of a DESIGN MASTER or even cooperate on the EVALUATION design. Such participation will have a positive effect on the LEARNER'S MOTIVATION and later the involvement in the learning processes themselves. Besides, occurrence of unsuitable design elements (e.g. inappropriate content or method), that could later cause resistance or dissatisfaction of the learners, can thus be limited to a minimum.

See also: LEARNER'S CHOICE in a COURSE
LEARNER'S MOTIVATION

¹ Intrinsic motivation comes from the learner himself or herself, whereas extrinsic motivation is caused by external circumstances ([Long98], p. 24). Input motivation can have both intrinsic and extrinsic characteristics (e.g. the learner joins the qualification both because he or she is interested in eGovernment and because gaining the qualification is necessary for a promotion), whereas external motivation is purely extrinsic.

Compare: [Let them decide] ([*Fric+06], p. 10)
[Students decide] ([*Berg+06a] p. 22)
Compare also: ([Galb98], pp. 6-8; [Lair78], pp. 160-161)

QUALIFICATION CONTENT

The QUALIFICATION CONTENT is concerned with what will be taught to the learner. **The DESIGN MASTER describes, what the learners should know, be able to do and what attitudes they should hold upon leaving the course. Based on the LEARNER'S BACKGROUND, it can be decided, what the learners have to master during the PROGRAMME OF STUDY.** Consequently, the QUALIFICATION CONTENT includes discipline specific knowledge and also further skills (e.g. interpersonal skills, presentation skills) and believes.

See also: DESIGN MASTER
LEARNER'S BACKGROUND

EDUCATION METHODS

EDUCATION METHODS describe the organisation forms of a PROGRAMME OF STUDY. There are several possible methods to choose from:

- the classic **presence education**, that enables direct face-to-face communication and requires the presence of learners and INSTRUCTORS in one place at the same time,
- the **distance learning**, that largely depends on self-directed autonomous learning, based on provided learning materials; in this case, the INSTRUCTORS and the learners are divided in space and time,
- the **eLearning**, which employs ICT, to support learning processes; eLearning can be used in the same way as distance learning, however it offers also further opportunities by allowing synchronous and asynchronous communication, independent of space - networked learning (e.g. virtual classrooms, VIRTUAL COLLABORATIVE LEARNING etc.) and
- the **blended learning** approach, which supports the view, that different methods are suitable for different purposes and advocates the combination of the above named methods.

See also: COURSE METHOD
Compare also: ([Kroe+04], pp. 14-25; [Lies05], pp. 12-17; [Ross92], p. 21)

EVALUATION

The EVALUATION of a PROGRAMME OF STUDY can not concentrate on the learners' abilities only. Furthermore, **the success and suitability of the whole programme itself has to be measured**. Of course, as education attempts to transfer knowledge, skills and attitudes onto the learners, it is still the learner, who remains in focus. Based on KIRKPATRICK'S model, there are four levels of evaluation:

- acceptance of the qualification among the learners,
- learning success of the qualification,
- transfer of the QUALIFICATION CONTENT into practice and learners' behaviour and
- results of the training for the learners and their environment.

The EVALUATION can be either conducted continually throughout the PROGRAMME OF STUDY or at its end. The EVALUATION results are important for the improvement of future qualification design.

See also: EXAM
FEEDBACK

Compare also: ([Kirk96], pp. 54-59; [Lies05], pp. 43-46)

EXAM

An EXAM seeks to assess the knowledge and skills, the learners have gained in the PROGRAMME OF STUDY. There are several kinds of EXAMS, that can be used. They can be written or verbal, or an assignment can be evaluated (e.g. project, thesis). An EXAM at the end of a PROGRAMME OF STUDY can also be a collection of EXAMS from the COURSE level, rather than a single large EXAM. When designing a PROGRAMME OF STUDY, it has to be decided, what form the EXAM(s) will have and what will be tested in them (e.g. learners' knowledge, how fast can they finish a certain task).

See also: EVALUATION
EXAM in a COURSE
FEEDBACK

Compare: [Kind of exam] ([*Fric+06], pp. 31-32)
[Trial exam] ([*Fric+06], pp. 32)
[Selectable exam time] ([*Fric+06], pp. 32)
[Kinds of exams]([*Berg+06b], pp. 14-15)
[Mock exam]([*Berg+06b], pp. 15-16)

[Fair grading]([*Berg⁺06b], pp. 16-17)
[Grade it again, Sam]([*Berg⁺06b], pp. 17-18)
Compare also: ([Kirk96], pp. 54-59; [Lies05], pp. 45-46)

FEEDBACK

The term FEEDBACK includes communication in both directions. **It means both the INSTRUCTOR'S FEEDBACK for the learners, concerned with their results or problems, and the FEEDBACK of the learners' about their perception of the PROGRAMME OF STUDY. In both directions, FEEDBACK is an important communication tool.** To the learners it offers certainty concerning their abilities and the fulfilment of their study aims. To the designers it is the most important method to measure the EVALUATION levels. Communication among INSTRUCTORS and designers can also provide interesting and important FEEDBACK.

See also: DIRECT FEEDBACK
EVALUATION
EXAM in a COURSE
FEEDBACK

Compare: [Anonymous mailbox] ([*Fric⁺06], p. 17)
[Differentiated feedback] ([*Fric⁺06], p. 32)
[Feedback] pattern language ([*Berg⁺06b])
[Feedback] ([*Fric⁺06], p. 26)
[Participants feedback forms] ([*Fric⁺06], p. 31)
[Teacher teams] ([*Fric⁺06], p. 27)
Compare also: ([Kirk96], pp. 54-59; [Lies05], pp. 45-46)

CERTIFICATE

A CERTIFICATE is awarded to the learners upon the successful completion of the PROGRAMME OF STUDY. Depending on the circumstances and the learners, the CERTIFICATE can also contain a grade or other means of evaluating the learning success. The CERTIFICATE serves as a proof, that the learner possesses certain skills and knowledge and should therefore also contain a description of the QUALIFICATION CONTENT. In order to achieve highest possible acceptance of stakeholders and other parties, a qualification standard has to be established or an already accepted standard (e.g. Master) used.

3.3.3 Pattern Language of a MODULE

Particularly in formal education, it is common to divide a PROGRAMME OF STUDY into smaller parts, MODULES. This is done, mainly because formal PROGRAMMES

OF STUDY (e.g. a Master programme offered by a university) tend to cover wide areas and they often involve several subjects. As explained in section 2.1.2, eGovernment is a joint discipline, that contains several subjects (see fig. 2.2). To visualize this fact to the learners and to help them with orientation, the use of MODULEs in eGovernment qualifications is advisable.

Further, the integrative approach, discussed in this thesis, is intended for students, adult learners and international learners. It is however likely, they will not share their education throughout a whole PROGRAMME OF STUDY. It is more probable, that they will participate in separate PROGRAMMEs OF STUDY and meet on lower levels. Designing MODULEs can create such meeting opportunities.

In a subject as broad as eGovernment and with the participation of different learner groups, it is likely, that not all learners will be interested in the whole PROGRAMME OF STUDY. Adult learners, for instance, might already be at least familiar with subjects like public administration or law. Topics too closely concerned with IT (e.g. programming) may be of no interest to them. Students, on the other hand, might want to find out more about exactly such topics. International learners may consider some topics uninteresting, because they have no use for them in their home country (e.g. law). Designing MODULEs, each concerned with a specific problem area, also means providing potential choice for the learners. If only several basic MODULEs are mandatory and the learners are free to choose from the rest, it is possible the learners can create their own personalised PROGRAMME OF STUDY. This can have a positive effect on LEARNER'S MOTIVATION (see also LEARNER'S CHOICE). However, to guarantee the validity of the CERTIFICATE, a mechanism has to be offered, that ensures, that all the learners participated in about the same number of MODULEs (e.g. credit points).

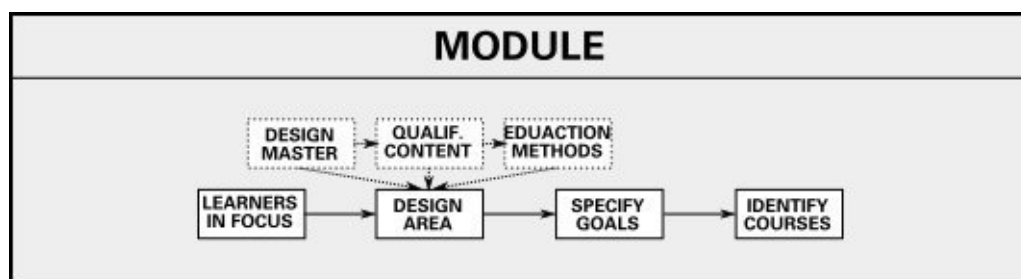


Fig. 3.5: Pattern language of a MODULE

The Pattern Language of a MODULE is illustrated in fig. 3.5. Though it is advisable, the design of MODULEs is not compulsory. Particularly in smaller PROGRAMMEs

OF STUDY, the division into MODULEs might not be possible at all. In this case, the MODULE level of the model can be limited to the patterns SPECIFY GOALS and IDENTIFY COURSEs, which are necessary for the COURSE level.

LEARNERS IN FOCUS

Similar to identifying the LEARNERS IN FOCUS on the level of a PROGRAMME OF STUDY, on the MODULE level it has to be again decided, who the participants will be. **Different learners groups may have been expected or planned to take part in particular MODULEs.** This refocusing is especially important, as there are three different learner types (students, adults, international participants). The specific characteristics of the participating group of learners have to be taken into account in further design of the MODULE.

See also: LEARNERS IN FOCUS in a PROGRAMME OF STUDY
LEARNERS IN FOCUS in a COURSE
Compare: [Adapt to participants background] ([*Fric+06], p. 10)
Compare further: ([Long98], pp. 21-35)

DESIGN AREA

A DESIGN AREA is topic area, which is concerned with a particular problem. It can be identified on the basis of the design of the PROGRAMME OF STUDY, particularly the DESIGN MASTER, QUALIFICATION CONTENT and EDUCATION METHODS. If these are not available (because the model has been entered on the MODULE level), comparable decision on the aims, content and method of the PROGRAMME OF STUDY have to be used. Based on these, smaller, coherent problem areas or topics can be identified and described. The description of a DESIGN AREA should contain the topic or a problem, its relation to the PROGRAMME OF STUDY as a whole and its relations to other DESIGN AREAs.

See also: EDUCATION METHODS
DESIGN MASTER
QUALIFICATION CONTENT

SPECIFY GOALS

The description of DESIGN AREAs is a foundation for the COURSEs of the MODULE. However, this description may be insufficient to clearly define these COURSEs. **To be able to IDENTIFY COURSEs, exact goals of the DESIGN AREA have to be known.** The definition of these goals will be related to the description of the DESIGN MASTER. But, whereas the characteristics of a DESIGN MASTER may not

be as specific or detailed, the goals of the DESIGN AREA have to be clear and also measurable. This will ensure, that those responsible for the design of COURSEs (e.g. INSTRUCTORS), will be able to create and teach COURSEs, that contribute towards the aims of the MODULE as well as the PROGRAMME OF STUDY.

See also: COURSE PLAN
EDUCATION METHODS
DESIGN AREA
DESIGN MASTER
QUALIFICATION CONTENT

IDENTIFY COURSES

The process of IDENTIFYing COURSEs is in its essence similar to the identification of MODULEs. Here, the SPECIFIED GOALS serve as the foundation. **The goals are grouped into coherent clusters** and if necessary further specified or completed. **These clusters are the basis of the COURSEs** and become the COURSE objectives. Further, based on the DESIGN AREA, content is assigned to the clusters. Once the COURSEs are so identified, it should be decided, which of them will be compulsory for the students and from which the students can choose. Here, the same principles apply, as by the MODULEs. Learners should be given the opportunity to personalise their learning, which will lead to higher motivation. The end result, therefore, and the foundation of each COURSE, is a set of objective, rough description of the content, needed for satisfying these objectives and a decision, whether the COURSE will be compulsory.

See also: DESIGN AREA
SPECIFY GOALS

3.3.4 Pattern Language of a COURSE

Whereas the elements of a QUALIFICATION APPROACH, that have been introduced in the previous chapters, have mainly a organisational character, it is in a COURSE, where the actual learning processes occur. Because of this, INSTRUCTORS themselves are often in charge of planning them. The design itself calls for more detail, than by a MODULE or a PROGRAMME OF STUDY. This could have been seen already, when SPECIFYing GOALS and IDENTIFYing COURSEs. Goals, decisions and plans have to be exact enough to offer the INSTRUCTORS support throughout the whole COURSE and hold up their confidence in difficult or disputable situations.

Just as it was the case with MODULEs, it can positively affect the learners, if they have a choice among the COURSEs. Similar to MODULEs, it allows the learners to

choose interesting or useful COURSES. It is more likely, that learners will find such personalised education more enjoyable and will have higher motivation. However, as with the MODULEs, it has to be ensured, that the learners, who have completed a MODULE, have attended a comparable amount of COURSEs of the MODULE (e.g. credit points). When learners can choose the COURSEs they wish to attend and if these COURSEs are complementary, the learners are in a lesser danger of failure. (Learner who fails one COURSE can attend another one instead.) A high probability of success increases the motivation, particularly of adult learners ([Wlod98], pp. 91-93). Creating a point system also allows storing the learners' achievements. Adult learners then have the opportunity to attend COURSEs and collect points over a longer period of time, according to their needs.

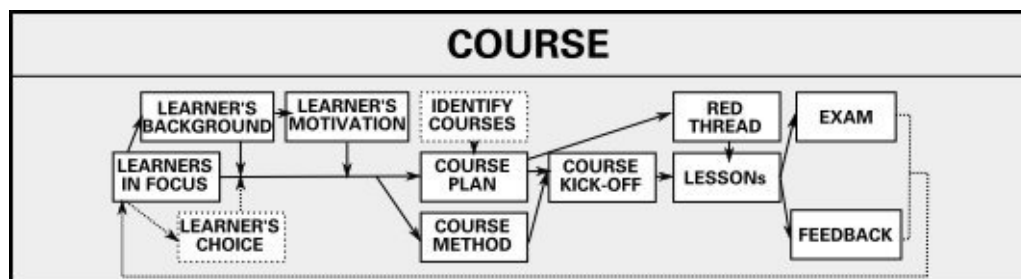


Fig. 3.6: Pattern language of a COURSE

The pattern language of a COURSE (see fig. 3.6) uses in its structure some of the ideas from FRICKE'S and VÖLTER'S pattern language for teaching of seminars (comp. [Fric⁺06]). It can be divided into three phases. In the first, preparatory phase, the patterns describe the planning and design before the teaching itself (LEARNERS IN FOCUS, LEARNER'S BACKGROUND, LEARNER'S CHOICE, LEARNER'S MOTIVATION, COURSE PLAN and COURSE METHOD). In the teaching phase, the LESSON pattern plays the central role (COURSE KICK-OFF, LESSON and RED THREAD). Finally, two patterns help to design the end of the COURSE (EXAM and FEEDBACK).

LEARNERS IN FOCUS

The learners have been considered in the design of a PROGRAMME OF STUDY and MODULE. On the COURSE level, however, particularly when not all COURSEs are compulsory, the learners divide into smaller groups. The composition of learners in these groups does not have to correspond with that of the PROGRAMME OF STUDY or the MODULE. Therefore, when designing a COURSE, **it has to be again considered, who are the LEARNERS IN FOCUS.**

See also: LEARNERS IN FOCUS in a PROGRAMME OF STUDY
LEARNERS IN FOCUS in a MODULE
Compare: [Adapt to participants background] ([*Fric+06], p. 10)
Compare further: ([Long98], pp. 21-35)

LEARNER'S BACKGROUND

Once it is clear, who are the LEARNERS IN FOCUS, their background can be explored. **In focus are information, that have direct connection to the COURSE.** Of course, general information like demographic data has to be also considered. Particularly important is (especially, if the COURSE is not mandatory), why did the learners choose to attend the COURSE and what do they expect. The COURSE design can then be either adapted to the learners' expectations or it has to be attempted to adjust the LEARNER'S MOTIVATION. This can also be the case by compulsory COURSEs, or if the learners' expectations contradict the purpose of the COURSE.

See also: LEARNER'S BACKGROUND in a PROGRAMME OF STUDY
Compare: [Adapt to participants background] ([*Fric+06], p. 10)
Compare further: ([Lies05], pp. 7-8, 18-19)

LEARNER'S CHOICE

Whereas it can be unusual and more difficult, to include learners in the design of a PROGRAMME OF STUDY or a MODULE, the participation in a COURSE design is much easier to arrange. The learners or their representatives can take part in general organisation, like time and place of the COURSE and the environment. They can help select the method of the COURSE, help to decide the details of the content or make suggestions concerning the EVALUATION and the EXAM. If it is not possible to include the learners directly, they can be given choice from several options.

The participation of learners, however, must not be understood as a restriction to the INSTRUCTOR. The aim is to contribute to the COURSE quality, through an intensive dialogue between the teacher and the learners. The opportunity to let the LEARNER'S CHOICE rule does not have to be limited to the preparation of the course, but can be also practised throughout the COURSE. The opportunity for LEARNER'S CHOICE can be even systematically included in the COURSE PLAN.

See also: LEARNER'S CHOICE in a PROGRAMME OF STUDY
LEARNER'S MOTIVATION
Compare: [Let them decide] ([*Fric+06], p. 10)
[Students decide] ([*Berg+06a] p. 22)
Compare also: ([Galb98], pp. 6-8; [Lair78], pp. 160-161)

LEARNER'S MOTIVATION

The motivation of a learner in a COURSE is more tangible and concrete than on the level of a PROGRAMME OF STUDY. The motivation, learners bring into a PROGRAMME OF STUDY, is in general a long term motivation. It can be fuzzy (e.g. improve future prospects) or unrelated to the actual programme aims (e.g. promotion). However, it can be expected, that the LEARNER'S MOTIVATION to join a COURSE (particularly a non compulsory one) has a connection to the subject matter of the COURSE or its use in practice. Learners lacking a direct motivation are less likely to muster enough involvement to really profit from the COURSE. It is therefore important, that the INSTRUCTORS explore the LEARNER'S MOTIVATION and, if necessary, find means to support or direct it.

See also: LEARNER'S MOTIVATION in a COURSE
 LEARNER'S CHOICE

Compare further: ([Wlod98], pp. 91-125)

COURSE PLAN

The INSTRUCTORS, in adult education as well as at the universities, are usually specialists in the subjects they teach. They have mostly a vast practical experience in the topic and many, particularly at the universities, have also teaching experience. For such experts, it is particularly important, to create a plan, to help them with orientation, when they teach. **The plan should contain the content, that will be taught in every LESSON and at least a rough planning of the LESSONs themselves.** When designing the plan, the INSTRUCTOR has to bear in mind the LEARNER'S BACKGROUND. It is most likely, that the learners do not have the expertise of the INSTRUCTOR and that accordingly they might not be able to understand associations and content, which to the INSTRUCTOR seem rather simple. The COURSE PLAN therefore has to be designed, so that it picks the learners up at their current level and leads them through the content, towards the COURSE aims. The COURSE PLAN prevents, that the INSTRUCTOR presents poorly structured content or even forgets to explain important associations to the learners.

To the learners, the COURSE PLAN can represent a RED THREAD, that leads them through the COURSE, so that at any point of the COURSE, they can understand what they are doing and how it relates to the COURSE aims. For this reason, the COURSE PLAN should be presented to the learners. This is usually done in form of a COURSE agenda, where the points of the agenda correspond with LESSON titles.

See also: COURSE KICK-OFF

LEARNER'S CHOICE
LESSON
RED THREAD

Compare: [Seminar plan] ([*Fric⁺06], pp. 11-12)

Compare further: ([Lair78], p. 131)

COURSE METHOD

Similar to EDUCATION METHODS on the level of a PROGRAMME OF STUDY, it has to be decided, which methods the COURSE will use. Once again, there is a choice from *presence education*, *distance learning*, *eLearning* or *networked learning* and *blended learning*. If blended learning is chosen, it has to be planned, what methods will be used and when. Also, it is necessary to “blend” the methods, to make the transfer from one method to another clear and understandable to the learners. And once again, if possible, the methods in use and their purpose should be communicated to the learners.

See also: EDUCATION METHODS

Compare also: ([Lies05], pp. 12-17; [Ross92], p. 21)

COURSE KICK-OFF

The COURSE KICK-OFF seeks to introduce the COURSE to the learners.

This can include the introduction of the INSTRUCTORS themselves, the explanation of the COURSE PLAN and COURSE METHOD or offer an outlook on the PEDAGOGICAL TECHNIQUES used in the LESSONS. Being thus mainly a service to the learner, its objective is to deepen the learners' understanding of the COURSE and directing their expectations. The kick-off can include two possible services. Firstly, the COURSE can be presented through materials provided beforehand (e.g. description in internet, fliers), offering the basic information, like COURSE description, time, place, or a COURSE agenda. This materials should be detailed enough to allow the learners to form a rough opinion about the course and if applicable, decide, if they wish to attend the COURSE. Secondly, a COURSE KICK-OFF should include a single session (or a part of it), which discusses the COURSE in detail. In this session, the INSTRUCTOR should introduce himself or herself, explain the COURSE aim and the COURSE agenda and discuss it with the learners. It is an opportunity to talk about the learners' expectations and background and establish a suitable atmosphere between the INSTRUCTOR and the learners.

See also: COURSE PLAN
RED THREAD
FEEDBACK

Compare: [Introduction session] ([*Fric+06], p. 15)
[Welcome the participants] ([*Fric+06], pp. 15-16)

RED THREAD

It was already explained, that an INSTRUCTOR needs a COURSE PLAN to prevent him or her from “getting lost” in the COURSE. The learners are in even greater danger, as the content of the COURSE is new to them. Therefore, the INSTRUCTOR has to assist the learners on their way through the COURSE. **A RED THREAD is an instrument of any form, that helps the learners understand, where they are in the COURSE and how the current activity relates to the COURSE aims.** There are many types of RED THREADs. For instance, INSTRUCTORS often relate to the COURSE agenda, to remind the learners, where they are. But a RED THREAD can also be much more subtle, incorporated in a well planned sequence of lessons itself. This kind of RED THREAD is not directly perceived by the learners, nevertheless, it ensures, that they do not lose the overview of the COURSE.

See also: COURSE KICK-OFF
COURSE PLAN

Compare: [Consistent metaphor] ([*Berg06], pp. 4-5; [*Berg+06c], pp. 4-5)
[Early bird] ([*Berg06], pp. 1-2)
[Linking old to new] ([*Berg+06c], p. 12)
[Reference the plan] ([*Fric+06], p. 12)
[Seminar plan] ([*Fric+06], pp. 11-12)
[Spiral] ([*Berg+06c], pp. 10-12; [*Berg06], pp. 2-3)

EXAM

The general planning of EXAMs takes place already in the design of a PROGRAMME OF STUDY. On the COURSE level, the design of EXAMs has a much more operative character. **The purpose of the EXAM is to see, whether the learners have achieved the SPECIFIED GOALS.** The EXAM should therefore concentrate on testing of the key ideas and goals, not attempting to trick the learner into answering wrongly. Further, the form (verbal, written, assignment) and a grading system of the EXAM has to be decided. The grading system, if possible, should be explained to the learners beforehand and abided, to ensure fairness. To decrease uncertainty and fear, regarding the EXAM, the INSTRUCTOR can offer a trial exam. In case of assignments, presentation and mock assessment throughout the work can be very helpful.

See also: EVALUATION
EXAM in a PROGRAMME OF STUDY

FEEDBACK**SPECIFY GOALS**

- Compare: [Fair grading]([*Berg+06b], pp. 16-17)
[Grade it again, Sam]([*Berg+06b], pp. 17-18)
[Key ideas dominate the grading]([*Berg+06b], p. 17)
[Kind of exam] ([*Fric+06], pp. 31-32)
[Kinds of exams]([*Berg+06b], pp. 14-15)
[Mock exam]([*Berg+06b], pp. 15-16)
[Selectable exam time] ([*Fric+06], p. 32)
[Trial exam] ([*Fric+06], p. 32)
- Compare also: ([Kirk96], pp. 54-59; [Lies05], pp. 45-46)

FEEDBACK

The exchange of FEEDBACK among learners and INSTRUCTORS is very important for the quality of education and it should be encouraged throughout the COURSE. INSTRUCTORS can use FEEDBACK to inform the learners about their progress, their strength and weaknesses. Being aware of own abilities and problems can greatly suppress learners' anxiety and positively affect motivation. Particularly important is FEEDBACK regarding the EXAM. The learners need to understand, where they have gone wrong. FEEDBACK from the learners can help the INSTRUCTORS improve the COURSE atmosphere and direct the COURSE, to increase learners' satisfaction. Not everyone is open to spontaneous FEEDBACK. It is therefore essential to create a positive atmosphere and, if necessary, encourage FEEDBACK (e.g. open questioning, games). Bear in mind, that FEEDBACK has to include positive as well as negative comments.

- See also: **DIRECT FEEDBACK**
EVALUATION
EXAM in a PROGRAMME OF STUDY
FEEDBACK

- Compare: [Anonymous mailbox] ([*Fric+06], p. 17)
[Differentiated feedback] ([*Fric+06], p. 32)
[Feedback] pattern language ([*Berg+06b])
[Feedback] ([*Fric+06], p. 26)
[Participants feedback forms] ([*Fric+06], p. 31)
[Teacher teams] ([*Fric+06], p. 27)
- Compare also: ([Kirk96], pp. 54-59; [Lies05], pp. 45-46)

3.3.5 Pattern Language of a LESSON

A LESSON is a single teaching unit. The division of a COURSE into LESSONs is not always clear and the LESSONs do not have to have the same length (e.g. fully self-directed distance learning, project assignment with several milestones). However, it is

usually possible to separate a COURSE into several parts, with a clearly defined beginning and end. These sessions have a concrete set of aims, that contributes towards the SPECIFIED GOALS of the COURSE. Often, a single PEDAGOGICAL TECHNIQUE or a group of them is used throughout one LESSON.

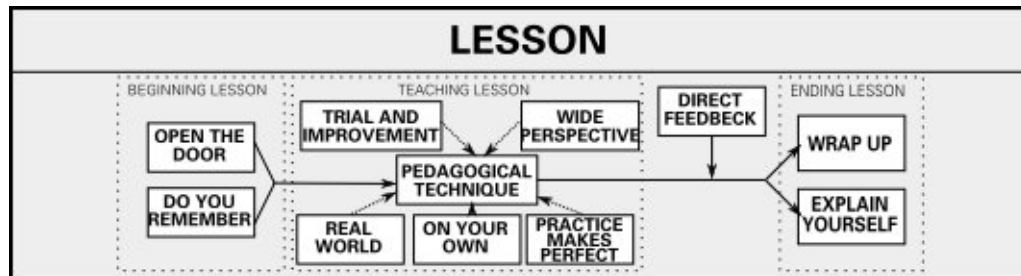


Fig. 3.7: Pattern language of a LESSON

A LESSON can be divided into three parts (see fig. 3.7). The first part is concerned with the beginning (patterns OPEN THE DOOR and DO YOU REMEMBER) and the last part with the ending of the LESSON (patterns WRAP UP and EXPLAIN YOURSELF). The middle part represents the actual teaching (patterns PEDAGOGICAL TECHNIQUE, WIDE PERSPECTIVE, REAL WORLD, ON YOUR OWN, PRACTICE MAKES PERFECT and DIRECT FEEDBACK). The core of the teaching of a LESSON is a suitable PEDAGOGICAL TECHNIQUE or a set of them. The techniques determine the actual form of teaching. However, certain principles and supportive patterns are akin to all lessons.

OPEN THE DOOR

This pattern concentrates on the opening of a LESSON. It is particularly suitable for the first lesson of the COURSE. The aim is to break the ice and eliminate any unsuitable barriers between the INSTRUCTOR and the learners. Also, it seeks to create a comfortable relationship among the learners themselves. This is achieved by mutual introduction. By combining the introduction with a small game (e.g. throwing a ball) or a discussion, the whole atmosphere will become more relaxed and open. If necessary, use the opening time to introduce the LESSON and the employed PEDAGOGICAL TECHNIQUE.

See also: COURSE KICK-OFF
 Compare: [Open the door] ([*Ecks06], pp. 3-4)
 [Welcome the participants] ([*Fric+06], pp. 15-16)

DO YOU REMEMBER

After one LESSON is ended, there is usually a certain amount of time before the next LESSON starts. Although it is often expected of learners to repeat the work done in the LESSONs or to fulfil a housework assignment (e.g. reading), it is helpful to remind the learners of the content and the activities of the previous lesson. All learners have other commitments besides this particular COURSE, like a job or the attendance of other COURSEs and can very easily forget, what was done in the last LESSON. Repetition is also a part of the RED THREAD policy. To prevent stereotypical repetitions, the learners should be involved in the revision, for instance in form of discussions, games or even small tests. You can also ask the learners themselves to shortly revise last LESSON's subject.

See also: RED THREAD
Compare: [Do you remember] ([*Ecks06], p. 10)

TRIAL AND IMPROVEMENT

The concept of experiential learning, introduced in section 2.3.3, calls for the opportunity for learners, to try out, what they have learnt or what they are supposed to learn. When doing so, it is inevitable, that the learners will make mistakes. **In order to maintain LEARNER'S MOTIVATION, an environment has to be created, that explicitly views mistakes as a part of learning and way to improvement.** To do this, an atmosphere has to be supported, where making mistakes is seen as normal and does not receive negative FEEDBACK. Questions must not be interpreted as a sign of lacking knowledge, but rather as means to increase understanding. Such environment will encourage the learners and the INSTRUCTOR to try new ideas and thus improve their skills.

See also: DIRECT FEEDBACK
ON YOUR OWN
PRACTICE MAKES PERFECT
Compare: [Honor questions] ([*Berg+06a], pp. 8-9)
[Nobody is perfect] ([*Berg+06d], pp. 6-7)

WIDE PERSPECTIVE

eGovernment is often viewed mainly from its technical side. However, as shown in section 3.2, besides IT and business informatics, there are also other areas directly involved and even more topics distantly related. The learners will therefore need a rather WIDE PERSPECTIVE to deal with eGovernment. This can be achieved either by including and linking these topics throughout the LESSONs or by making connec-

tions to other COURSEs and MODULEs more visible. It can be also helpful to include several INSTRUCTORS throughout the COURSE. This way, they can all offer their views to the learners. INSTRUCTORS from the practice, for instance, often offer very different points of view from academic INSTRUCTORS. Further, the learners have to be taught and encouraged to actively seek different views to problems.

Compare: [Industry partner] ([*Berg⁺06d], pp. 4-5)
 [Multiple pronged attack] ([*Berg⁺06d], pp. 7-8)
 [Round and deep] ([*Berg⁺06d], pp. 5-6)
 [Team teaching] ([*Berg⁺06d], pp. 3-4)
 [Wider perspective] ([*Berg⁺06d], pp. 2-3)

REAL WORLD

The content of a LESSON can include theoretical as well as practical components. To satisfy the experiential component of the integrative approach, the learners should be given exercises or assignment, to try out, what they have learnt. **Such exercises and assignments, particularly for the practical parts of the content, have to be close to the practice in the REAL WORLD.** This will prevent frustration, should the learners later feel, that what they have learnt in the qualification is worthless in the REAL WORLD. One example is the introduction of the learners to large and complex problems, as it is most likely, that they will encounter such in the practice. Teaching learners to practice on small examples, can later lead to their incapability to solve real problems, because they lack the skill to deal with them.

See also: ON YOUR OWN
 PRACTICE MAKES PERFECT
Compare: [Fixer upper] ([*Berg⁺06d], pp. 8-9)
 [Larger than life] ([*Berg06], pp. 10-11)
 [Lay of land] ([*Berg06], pp. 8-9)
 [Mission impossible] ([*Berg⁺06e], pp. 11-12)

ON YOUR OWN

Although the INSTRUCTORS can not know everything, they still present a great source of information. **Whereas it is helpful for the learners to ask their INSTRUCTORS question to deepen their understanding, they have to also be able to recognise other resources, like media, their peers and themselves.** For this reason, they should be encouraged to attempt to solve the problems on their own or with help of other learners, before questioning the INSTRUCTOR. Such practice helps them establish their knowledge, utilise new resources and find confidence in themselves. Learners can be encouraged to search for answers on their own for example

by open discussions, where all learners participate in answering a particular questions, or through assignments, they have to solve either alone or in groups.

See also: PRACTICE MAKES PERFECT
TRIAL AND IMPROVEMENT
Compare: [Ask your neighbour] ([*Ecks06], pp. 5-6)
[Challenge] ([*Ecks06], pp. 6-7)
[Invisible Teacher] ([*Berg+06a], pp. 9-10)

PRACTICE MAKES PERFECT

When learning both theoretical and practical issues, the learners need to have many opportunities to practice. Not only does practicing support the learning process, it also helps to show problematic issues, for example topics, that the learners do not understand or they have interpreted wrongly. Often, the learners feel, they have understood a topic upon hearing and only when they attempt to use it, they experience problems. However, exercises can be very time consuming. In such case, the learners can be given assignments as homework. The results and problems can be briefly presented and discussed in the next LESSON.

See also: ON YOUR OWN
Compare: [Different exercise level] ([Frick+06], p. 22)
[Explore for yourself] ([*Berg+06a], p. 12)
[Shot gun seminars] ([*Berg+06a], pp. 10-11)
[Student design sprint] ([*Berg+06a], p. 12)
[Try it yourself] ([*Berg+06b], pp. 7-8)

DIRECT FEEDBACK

If possible, students should be given DIRECT FEEDBACK on their behaviour in the LESSONs. This concerns in particular positive feedback - praise. The patterns of a LESSON stress the importance of practice and exercises. However, the exercises partially lose their value, if the learners are unable to assess, how well they have done. The INSTRUCTOR should therefore either review and comment on the exercises and assignments or provide means for the learners to evaluate their work themselves. The INSTRUCTOR also has to show appreciation of good results. This can be done for instance by publicly announcing assignments with best results or by making the best work of each learner publicly available.

Compare: [Gold star] ([*Berg+06b], pp. 13-14)
[Student online portfolio] ([*Berg+06b], pp. 11-12)

WRAP UP

LESSONs can be of different length. They can be shorter than two hours (e.g. university lessons) or last several days (e.g. self directed learning session). **Similarly, content of different amount and complexity can be included. It is therefore helpful to sum up the key ideas of the LESSON at the end.** Such WRAP UP will help learners revise and structure, what they have learnt and help them relate it to the COURSE aims. It is also a part of a RED THREAD.

See also: RED THREAD
Compare: [Wrap up] ([*Ecks06], p. 9)

EXPLAIN YOURSELF

Summing up of the key ideas at the end of a LESSON can be very helpful. It might be a good idea, though, to assign the WRAP UP to the learners. Asking learners to review what they have learnt in the LESSON increases their involvement. Besides, at the end, learners are often tired and find it difficult to keep their attention. Asking them to WRAP UP can help them to refocus. Doing the WRAP UP on their own reinforces the structuring and the learning process and helps to clear possible misunderstandings.

See also: ON YOUR OWN
WRAP UP
Compare: [Wrap up] ([*Ecks06], p. 9)

3.3.6 PEDAGOGICAL TECHNIQUEs

PEDAGOGICAL TECHNIQUEs are tools for achieving the aims of a COURSE or a particular LESSON. The organisation of PEDAGOGICAL TECHNIQUEs in this thesis is based on three dimensions (see fig. 3.8). Firstly, the **learners** have to be considered. As discussed before, there are three possible learner groups: students, adult learners and international learners.

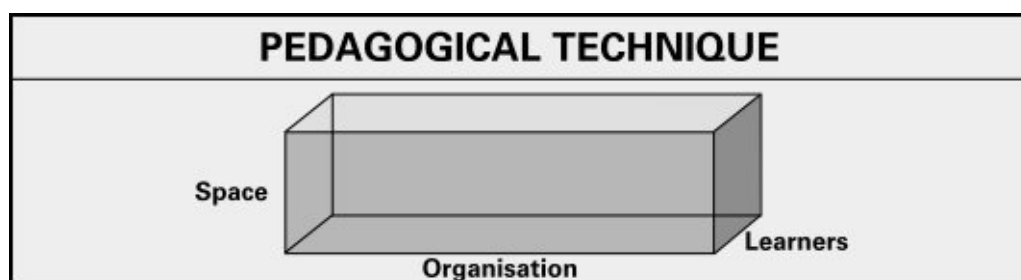


Fig. 3.8: PEDAGOGICAL TECHNIQUEs

Based on the learners, their background and COURSE aims, the choice of a suitable learning **space** can be selected. The learning space can be either physical, where learners meet in person (e.g. a classroom, lecture room) or virtual, where the learners use the internet to support their studies. Further, there are several possible forms of **organisation** of the learning activity. PAULSEN identifies following forms: one-alone, one-to-one, one-to-many and many-to-many ([*Paul06]). According to the dimensions chosen, different techniques are suitable. The PEDAGOGICAL TECHNIQUEs presented in this thesis cover only a part of all possible techniques. Because of space limit, this section presents only a list of the techniques. Exact explanations in the pattern form can be found in the design model support tool in Appendix 3. Besides, to make the search for suitable techniques easier, a database of the techniques is presented in Appendix 4.

- BRAINSTORMING
- BUZZGROUPS
- CASE STUDIES
- DISCUSSION
- FORUM
- GAMES
- INTERNSHIP
- LEARNING CONTRACTS
- LECTURE
- MENTORSHIP
- PROJECTS
- QUESTION-ANSWER SESSION
- READING
- ROLE PLAYS
- SELF-DIRECTED LEARNING
- SIMULATION
- SYMPOSIUM

- VIRTUAL COLLABORATIVE LEARNING (VCL)

3.3.7 Pattern Language of an INSTRUCTOR

Though this educational design model maintains the opinion, that the learners have to be in the centre of education, the INSTRUCTORS are nevertheless a very important component of successful education. They are in charge of the COURSEs and though, if desired, they can withdraw (some of) their control and pass it onto the learners, they still maintain high influence. It is therefore important, that the abilities, the character and the beliefs of the INSTRUCTORS are taken into account when designing eGovernment education. Particularly important is the INSTRUCTOR in the design of COURSEs and LESSONs.

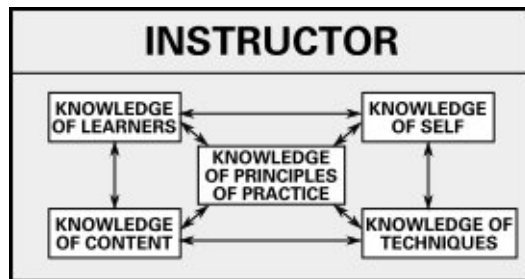


Fig. 3.9: Pattern language of an INSTRUCTOR

The pattern language is based on GALBRAITH'S framework, focused on teachers of adults ([Galb98], pp. 4-19). It contains five knowledge areas an INSTRUCTOR has to master (see fig. 3.9). The language follows two aims. Firstly, it encourages the INSTRUCTOR to explore their own ideas and philosophies. Secondly, it helps the INSTRUCTOR to build and maintain an open stand towards the learners and new methods and ideas in the pedagogical practice.

KNOWLEDGE OF PRINCIPLES OF PRACTICE

An INSTRUCTOR should be aware of present principles of the educational practice. This can be difficult, because - as has been said before - not all INSTRUCTORS have a pedagogical background and they may not have time and resources to explore this area. However, there is a large choice of literature on pedagogical topics and many authors have concentrated particularly on offering guidance to INSTRUCTORS with no or little formal background. It is also advisable to contact other INSTRUCTOR colleagues and discuss their opinions and knowledge. Of interest are particularly the following questions:

- What are your teaching principles?
- Do they change according to context or content?
- How do they differ from principles of your colleagues/from principles mentioned in the literature?
- Do you think you should change your principles? If so, how? If not, why not?

See also: KNOWLEDGE OF SELF
Compare further: ([Galb98], pp. 6-8)

KNOWLEDGE OF SELF

When exploring the KNOWLEDGE OF PRINCIPLES OF PRACTICE, the INSTRUCTORS review the methods they use and the principles they follow. Often, they might find out, that their principles do not correspond with those used by their colleagues or those suggested in the literature. And yet, they might be unable to see, why they follow these principles and may be unsure, if they should change them. It is therefore necessary, that the INSTRUCTORS explore the underlying believes and opinions.

All INSTRUCTORS have ideas and opinions about education. These are however often latent and only visible in the behaviour and teaching style of the INSTRUCTOR. In order to expand their vision and lay foundation for potential improvements of their teaching style, the **INSTRUCTORS have to actively explore their teaching beliefs and values**. There are five primary areas of interest: **the learner, the role of the teacher, the overall purpose of education, the content and the learning process**. The literature offers guides for INSTRUCTORS, to help them identify their philosophies (e.g. Philosophy of Adult Education Inventory (PAEI) ([Zinn98], pp. 57-72)).

For successful teaching, it is further necessary, that the INSTRUCTORS are aware of their own personality. They have to know their strength and weaknesses, regarding the education. These have to be considered, when designing COURSEs, LESSONs or choosing PEDAGOGICAL TECHNIQUEs.

See also: KNOWLEDGE OF PRINCIPLES OF PRACTICE
 KNOWLEDGE OF LEARNERS
 KNOWLEDGE OF CONTENT
Compare further: ([Apps76], pp. 18-26; [Galb98], pp. 8-12; [Zinn98], pp. 37-72)

KNOWLEDGE OF LEARNERS

The integrative approach to eGovernment results in a great diversity of learners involved. As it has been stressed repeatedly in the above sub-languages of qualification approach, **it is particularly important, that the INSTRUCTORS know the learners, who attend their COURSEs.** This knowledge is necessary for the design of the COURSEs and it is more than supportive throughout the qualification itself.

See also: LEARNERS IN FOCUS

Compare further: ([Galb98], pp. 12-14)

KNOWLEDGE OF CONTENT

This pattern may appear trivial, as the INSTRUCTORS are often selected especially because they have extensive knowledge of or experience with the subject of the COURSE they teach. In a broad and dynamic area like eGovernment, **it is however essential, that the INSTRUCTORS explore the content repeatedly and, if necessary, that they update their knowledge.** Such update is needed on regular basis, because eGovernment is still developing and it might also have to be adapted to the learners in a particular COURSE. Besides, the integrative approach also calls for practical experience for the learners. This may also cause need for the reevaluation of the INSTRUCTOR's KNOWLEDGE OF CONTENT.

See also: KNOWLEDGE OF LEARNERS

LEARNERS IN FOCUS

Compare further: ([Galb98], pp. 14-16)

KNOWLEDGE OF TECHNIQUES

PEDAGOGICAL TECHNIQUEs are tools, that support the INSTRUCTORS in achieving the COURSE aims. As there is a great variety of possible aims, different techniques are needed to fulfil them. It is therefore necessary, that the INSTRUCTORS are aware of diverse techniques. This way, they have a choice of suitable tools for their LESSONs. Some PEDAGOGICAL TECHNIQUEs are presented in this design (see section 3.3.6) and many more can be found in the literature. The KNOWLEDGE OF TECHNIQUES not only implies, that the INSTRUCTORS are aware of several possible techniques. They should also know, in which situations these techniques apply and if they suit personal believes and attitudes of the INSTRUCTOR.

See also: KNOWLEDGE OF LEARNERS

KNOWLEDGE OF SELF

PEDAGOGICAL TECHNIQUEs

Compare further: ([Galb98], pp. 16-17)

4 Practical Application of the Design Model

The previous chapters 2 and 3 have been concerned with a theoretical design concept. This chapter seeks to verify the design model in the practice. For this purpose the TEMPUS project “Integrative Qualification in eGovernment” is used. Section 4.1 describes the project and concentrates on a Virtual Collaborative Learning session, conducted in November/December 2005. Based on this background, section 4.2 demonstrates the use of the presented design model in the project conditions. Finally, section 4.3 discusses the strength and weaknesses of the design model in this particular setting.

4.1 “Integrative Qualification in eGovernment” Project

The Project “Integrative Qualification in Electronic Government” (IQeG) is supported by the Trans-European mobility scheme for university studies (TEMPUS) of the EU. The scheme enables universities from EU member countries to cooperate with those in Western Balkans, Eastern Europe and Central Asia, and the Mediterranean partner countries in higher education modernisation projects. The partners involved in the project are Dresden University of Technology - Department of Business Management and Economics, Vilnius University - Kaunas Faculty of Humanities and St.-Petersburg State University - School of Management, further the municipalities in Dresden, St.-Petersburg and Kaunas. The aim is to transfer knowledge and experience in eGovernment among the partners. Further, concepts of eGovernment education will be created as a foundation for international master programme and lifelong learning education.

One of the activities in the project was a VCL session, conducted in November/December 2005. The participants were students from Dresden, St.-Petersburg and Kaunas. Because of unplanned changes in the project schedule, there was a considerable time pressure, when designing the session. For this reason, the VCL was incorporated into already running courses. The students were divided into tri-national groups and given project-like assignments concerned with eCommerce and eGovernment. At the beginning and at the end of the session, a video conference was organised, with a presentation of assignment results in the latter.

Despite the considerable time pressure, the VCL session was successfully completed, mainly due to excess experience with VCL of the faculty staff from Dresden. However, there were some complaints of the students, concerning the tutoring. The students also complained about the fuzziness of the assignment, this was however intentional. Further, some groups had problems with communication and team work, particularly in the beginning of the session. Finally, although some students expressed the wish

to cooperate with employees from the municipality in Dresden, this cooperation could not be arranged due to the tight project schedule.

4.2 Using the Design Model in the Context of the Project

The design model from section 3.3 is most suitable for the design of a whole qualification, that is starting from the highest level of the pattern language, the PROGRAMME OF STUDY. However, the model can also be entered on the level of a MODULE or a COURSE, given that the decisions intended to be made on the higher levels are available, at least in a minimal form. It is not allowed to enter the model on the LESSON level, as this could lead to inconsistency and failure to fulfil the objectives of the COURSE.

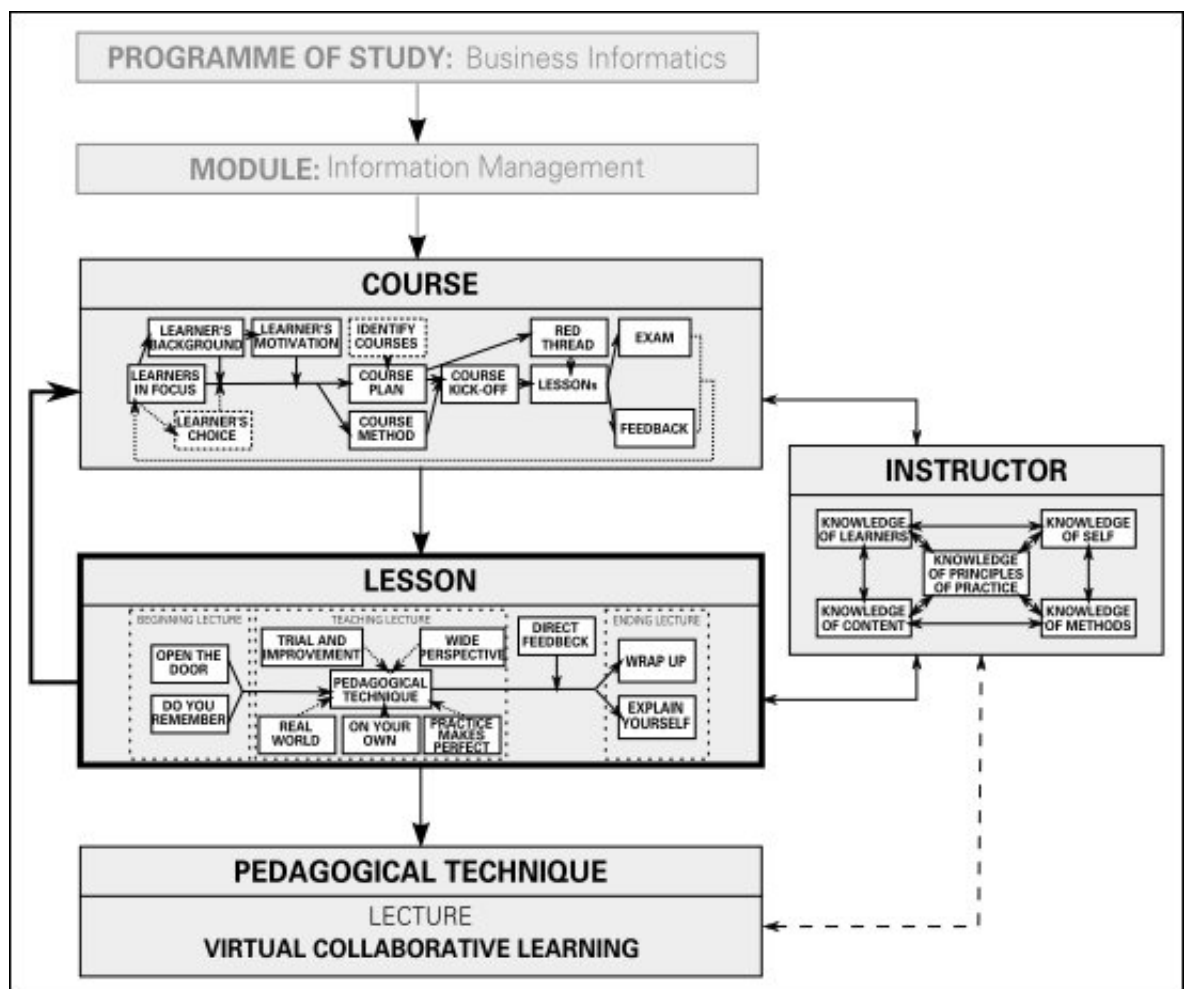


Fig. 4.1: Use of the design model in a VCL session of IQeG

The situation presented by the IQeG project is very different from the ideal model use. All participating students already enrolled in programmes of study (mainly Business Informatics, Public Administration and Information Management) and the VCL

was incorporated in running courses. This setting clearly violates the model rules, attempting to include a group of LESSONS into an already designed COURSE. According to the model rules, it would be necessary to move up one level and redesign the COURSE, using also decisions from the higher levels. Figure 4.1 illustrates the design on the example of Business Informatics students from Dresden.

The designers of the project would have to start by redefining the LEARNERS IN FOCUS, for the COURSE now includes international learners and potentially adult learners. This change in focus group also influences the patterns of LEARNER'S BACKGROUND, LEARNER'S CHOICE and LEARNER'S MOTIVATION in considerable way. There was only limited change in the COURSE PLAN and COURSE METHODS in Dresden, as a bi-national VCL has been planned before. Although, due to participation of students from three different cultural backgrounds, including cross cultural communication and communication skills in the course (e.g. through self-directed learning) would be helpful. The EXAM was also not affected, but there was a potentially higher importance of FEEDBACK, as the conducted VCL was a part of an important project.

After the reassessment of the COURSE, the VCL can be designed. The whole session can be viewed as a single LESSON as it is concerned with a single assignment. The chosen PEDAGOGICAL TECHNIQUE being VCL, it is important to give more consideration to the OPEN THE DOOR pattern, as the students will not have the opportunity to meet personally. The REAL WORLD, ON YOUR OWN and PRACTICE MAKES PERFECT patterns are supported through the VCL technique. The VCL also offers potential for encouraging WIDE PERSPECTIVE, but this is largely dependent on the assignments of the groups. Important role plays TRIAL AND IMPROVEMENT. Due to fuzzy assignment descriptions, students can easily become unsure, whether their results are correct. Such anxieties are in fact groundless, as the VCL does not focus on the results, but on the collaborative work. However, it is necessary to communicate this to the students and ensure them, that it is the commitment and the use of learnt methods, that plays the key role in the evaluation. DIRECT FEEDBACK can be used mainly to encourage students. Finally, the end of the VCL session calls both for a WRAP UP from the organisers and tutors as well as for a presentation of the results, in this case an opportunity for the students to EXPLAIN THEMSELVES.

Throughout the whole design, the INSTRUCTORS, who take the role of tutors, should not be left out of focus. VCL is not a common form of education and it can be necessary to enhance the tutors' KNOWLEDGE OF TECHNIQUES and KNOWLEDGE OF PRINCIPLES OF PRACTICE. Further, the VCL pattern calls for transfer of a

great part of the LESSON control onto the students. It is necessary to select tutors, whose beliefs and values do not contradict this concept (KNOWLEDGE OF SELF). The tutors are not supposed to provide support on the completion of the assignment, but they should be able to support the groups' collaboration. KNOWLEDGE OF CONTENT is in this case associated to knowledge of communication, cross cultural skills and team work with focus on virtual environments.

4.3 Discussion of Results

With the help of the model, higher consistency of the VCL with the courses in which it was implemented would have been achieved, even if the VCL was not a part of the courses in the beginning. It is also possible, that through more detailed consideration of the LEARNERS IN FOCUS, the cooperation with the municipality would have been more successful. Although the influence of time pressure in this case should not be underestimated. Providing students with fuzzy assignments is used to teach them to deal with complex problems, yet students do not always understand it. By ensuring them, that it is their involvement, that is in focus, and providing positive feedback, complaints about fuzziness could be avoided. Further, by focusing on soft-skills and cross cultural skills among the learners as well as the students, communication problems would have diminished. And finally, giving more attention to the tutors and their background would have eliminated students objections to tutoring and help improve the communication.

However, because of the tight schedule and time pressure, it would most likely have been impossible to employ the model, because a redesign of courses of all three universities would have been necessary. The model could have therefore served more as a solution suggestion, than for actual design.

5 Outlook

Chapter 4 discussed the implementation of the design model in the practice and revealed certain difficulties with the use of the model. In general, the design model requires high involvement of the designers. Particularly the importance of the learners and the clearness of aims calls for research and careful consideration. But also the self-exploratory demands on the instructor pose considerable time investment. The implications of these difficulties are described in section 5.1. Section 5.2 suggest solutions for the problem.

5.1 Critical Discussion of the Educational Design

This model focuses on consistence and careful integration of different learners and diverse learning principles. Such approach requires thorough planning. However, not in every situation, this kind of preparation is desired. There are three possible scenarios based on the duration of the qualification unit in focus. These are short term, medium term and long term arrangements. Because the duration of the qualification unit is often correlated to the time invested in the preparation, the suitability of the model increases with the length of the planned qualification.

Short term arrangements

Short term qualification units involve for instance the planning of short courses, single lessons or groups of them. Such scenarios also often occur in project settings. These qualification units are often planned rather quickly, sometimes even have an ad-hoc character. In this case, the model may appear too complex and the time investment inappropriately high. The designer, particularly the instructors may also feel restricted in their creativity. The design of independent lessons (that is without the design of a course) is not allowed by the model at all. Therefore, although the use of thorough design would lead to higher consistency and better end results, it is unlikely, that the model will be employed in short term arrangements.

Medium term arrangements

The model is more appropriate for medium term design (design of courses or redesign of modules). Because of higher complexity of the units, the designers are ready to invest more effort into the planning, particularly if several learner groups of the integrative approach are involved. The model can be applied, as long as the top-down approach is used. However, courses and even more so modules are also often designed or redesigned with the bottom-up method, based on existing qualification units. In such cases, the

model can be used only as an inspiration, because this procedure infringes upon the model rules.

Long term arrangements

The model is particularly appropriate for long term planning of qualification, especially if all three learner groups of the integrative approach are involved. Qualifications, that last over a longer period of time and demand therefore considerable investment and involvement from the learners, have to offer high service in return. This can be in form of relevant knowledge and abilities, that the learners master, as well as through generally accepted certification. These services are closely related, as the acceptance of a certificate depends on a consistent quality level of education. Such services require careful design with assistance of a reliable model.

5.2 Adjustment of the Model

This section presents enhancements to the model that aim to eliminate or diminish the problems from section 5.1. The fact, that the model can appear too complex to be used, when designing short courses or single lessons, will be addressed in section 5.2.1. Section 5.2.2 offers an alternative pattern of a lesson, that allows the model to be entered on the lesson level as well. Finally, section 5.2.3 extends the model to allow the bottom-up approach. An illustration of the whole enhanced model can be found in Appendix 2.

5.2.1 Checklists for COURSE and LESSON

The following checklists can be used instead of the patterns COURSE and LESSON. They assume, that the designer is also the instructor, who will teach the course. In case of lesson design, they are only suitable, when a course has already been designed either with the help of the COURSE pattern or the COURSE checklist (see also Appendix 5).

COURSE checklist

- Who will be the learners participating in the course?
- What do you know about their background?
- What is their motivation for attending this course? Would you like to influence this motivation? How do you want to do it?

- Do you want to involve the learners in the design of the course? Do you want to do it openly or by offering the options to choose from? At what points of the course design do you want to involve them?
- What is the course aim? What will be the content of the course?
- What methods do you wish to use (presence education, distance education, eLearning, blended learning)?
- Make a course plan.
How many lessons will the course have and how long will they be?
What will be the topic of each lesson?
Check that all lessons contribute towards the course plan.
- Decide, how do you want to make sure, that the learners understand the course plan and how all the lessons contribute towards the course plan.
- Prepare information, that the learners will need before they attend the course and make them available.
- Prepare a kick-off session for the learners to make them familiar with the course aims and the course plan.
- Decide, what kind of exam will the learners have to pass. Decide on its content and revise the content again after the end of the course. Communicate the exam form and focus to the learners.
- How and when do you wish to give your learners feedback (e.g. verbal, written form, encourage feedback among learners)?
- How and when do you plan to receive feedback from the learners?

LESSON checklist

- If needed, include time for introduction of yourself and the students. Choose a suitable form for the introduction.
- Prepare a short revision of last lesson's topic or ask one of the learners to do it.
- Check the course plan and decide, what will be the topic of the current lesson and how is it connected to last lesson or the course aim in general. Communicate it to the learners.
- Select a suitable technique, based on the course method and content.

- Plan the lesson activity with regard to following points:
 - Are you giving the learners the opportunity to see the topic from different perspectives and see its connections to other topics?
 - Do the learners have a chance to use what they have learnt?
 - Do the learners understand, that problems and mistakes, that occur throughout the practice, contribute to deeper understanding of the topic and will not be sanctioned?
 - Are the exercises or assignments related to real world practices?
 - Are the learners encouraged to seek answers to their questions from other sources (e.g. peers, literature) than yourself?
 - Do the learners receive direct positive as well as negative feedback on their work?
 - Do they have the opportunity and, if needed, the encouragement to give their own feedback to you or other learners?
- Prepare a recapitulation of the lesson's topic for the end of the lesson or let the learners do it.

5.2.2 Extended LESSON

The pattern language of a LESSON (see fig. 5.1) presented in this section is an extended form of the original LESSON pattern. This extension enables the designer to enter the model on the LESSON level as well. In its essence, the extension directs the designer to rethink topics, that should have been decided on the course level. This section also offers a checklist for the design of lessons, that belong to courses, that have not been designed with the help of the COURSE pattern or a COURSE checklist (see also Appendix 5).

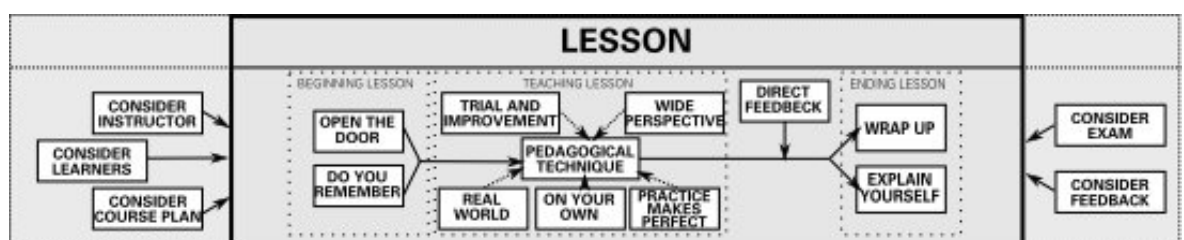


Fig. 5.1: Pattern language of an extended LESSON

CONSIDER LEARNERS

Consider, who will be the learners participating in the lesson. Especially, if they are different from learners taking part in the rest of the COURSE, it is necessary to reflect upon their background and their motivation.

See also: LEARNERS IN FOCUS
 LEARNER'S BACKGROUND
 LEARNER'S MOTIVATION
 LEARNER'S CHOICE

CONSIDER INSTRUCTOR

It is necessary to take into account the INSTRUCTOR, who will be teaching the LESSON. His or her KNOWLEDGE OF CONTENT has to fit the topic of the LESSON. Also, personal characteristics, beliefs and background have to be considered.

See also: INSTRUCTOR

CONSIDER COURSE PLAN

It is important, whether the LESSON is considered in the COURSE PLAN or if it is being added to the COURSE. If the LESSON has been added unplanned, it could be necessary to redesign the COURSE PLAN, to ensure consistence of all lessons towards COURSE aims.

See also: COURSE PLAN
 RED THREAD

CONSIDER EXAM

It is important to consider the connection between topics and activities done in the LESSON and the EXAM, as topics, that are considered most important in the LESSONs will be examined.

See also: EXAM

CONSIDER FEEDBACK

FEEDBACK plays an important part in the COURSE as it supports the relationship between the INSTRUCTOR and the learners and improves the quality of the COURSE. There are two possibilities to receive and give FEEDBACK: DIRECT FEEDBACK in the LESSON and FEEDBACK in the end of a COURSE. Both types are concerned with communication from the INSTRUCTOR to the learners as well as the other way round. **It is important to decide, how the DIRECT FEEDBACK from the LESSON relates to the overall FEEDBACK at the end of the COURSE.**

See also: FEEDBACK

Extended LESSON checklist

- Who will be the learners participating in the lessons? What do you know about their background and motivation? Are they different than learners attending other lessons of this course?
- Do you have knowledge and understanding of the content or do you need more information? Take some time to reflect upon your views and beliefs about teaching.
- Revisit your course plan. Is this lesson included in the course plan or was it added later? Is it conform with the course aims? Is the plan still relevant or should it now be changed?
- Plan the lesson itself. If needed, include time for introduction of yourself and the students. Choose a suitable form for the introduction.
- Prepare a short revision of last lesson's topic or ask one of the learners to do it.
- Check the course plan and decide, what will be the topic of the current lesson and how is it connected to last lesson or the course aim in general. Communicate it to the learners.
- Select a suitable technique, based on the course method and content.
- Plan the lesson activity with regard to following points:
 - Are you giving the learners the opportunity to see the topic from different perspectives and see its connections to other topics?
 - Do the learners have a chance to use what they have learnt?
 - Do the learners understand, that problems and mistakes, that occur throughout the practice, contribute to deeper understanding of the topic and will not be sanctioned?
 - Are the exercises or assignments related to real world practices?
 - Are the learners encouraged to seek answers to their questions from other sources (e.g. peers, literature) than yourself?
 - Do the learners receive direct positive as well as negative feedback on their work?
 - Do they have the opportunity and, if needed, the encouragement to give their own feedback to you or other learners?
- Prepare a recapitulation of the lesson's topic for the end of the lesson or let the learners do it.
- How will the content of the lesson be included in the final exam?

- How does the feedback you have given and received in the lesson associate with the overall feedback with regard to the whole course?

5.2.3 Bottom-Up Extension

To allow a partial bottom-up design, the model has been extended with the pattern EXISTING UNITS. The expansion is suitable for a scenario, where either a new qualification unit is to be created or an old one redesigned. In both cases, already existing units on a lower level are used.

EXISTING UNITS

In order to decide, which units are suitable for the use, it is first necessary to have an overview over the EXISTING UNITS. Therefore, all units on the lower level should be revisited and described. This description will later serve in the design/redesign of the new unit. The description can be oriented on the pattern languages of the levels. Of particular interest are LEARNERS IN FOCUS on all levels, DESIGN AREA description in a MODULE and COURSE PLAN in a COURSE.

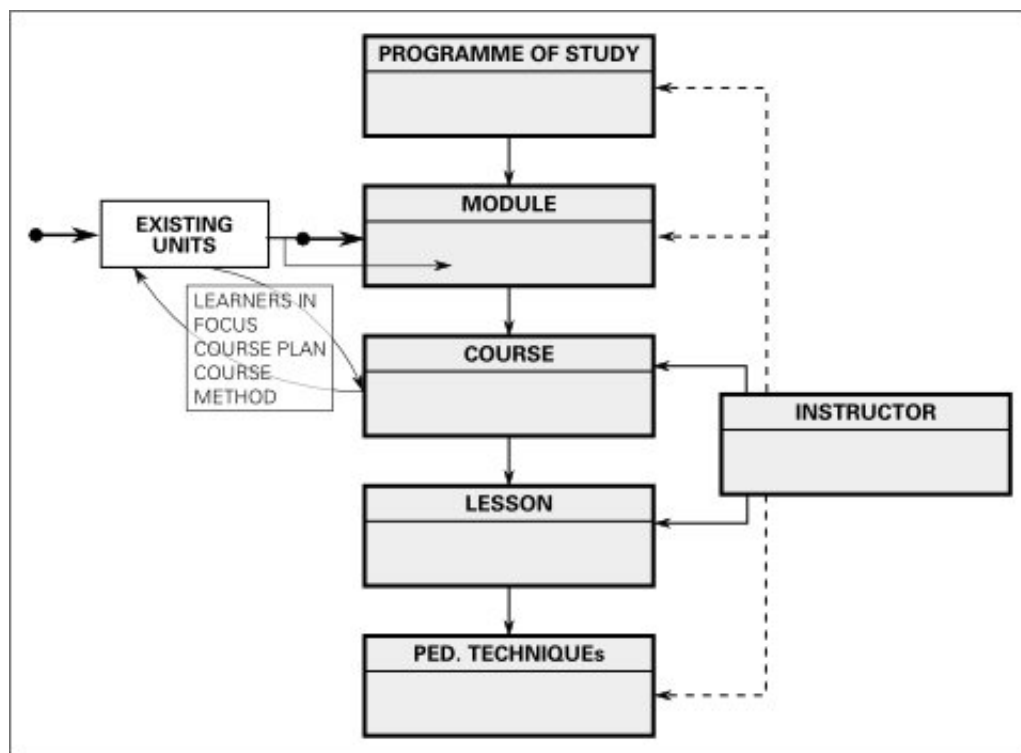


Fig. 5.2: Example of the bottom-up extension

With the description of the EXISTING UNITS, the model can be entered on the desired level. The pattern language of the current level is then used according to the model.

The descriptions of the lower-level units are used in the pattern, that is responsible for setting aims of the current level (in a PROGRAMME OF STUDY: DESIGN MASTER, in a MODULE: DESIGN AREA and in a COURSE: COURSE PLAN), as a support for shaping of these aims. Once the current level is completed, the design moves on the lower level. Here, the units are revisited to decide if changes are necessary.

Fig. 5.2 offers an example of the procedure. In this case, a MODULE is being designed, using already existing COURSEs. The COURSEs are describe (e.g. with the help of checklists), with particular attention to LEARNERS IN FOCUS, COURSE PLAN and COURSE METHOD. With this information, the focus moves to the pattern language of a MODULE. First, it is decided, who are the LEARNERS IN FOCUS of the MODULE. At this stage, the LEARNERS IN FOCUS of the MODULE can be compared to the LEARNERS IN FOCUS of the existing COURSEs. But the descriptions of the COURSEs are used mainly in shaping of the DESIGN AREA, together with information from the PROGRAMME OF STUDY, to which the MODULE belongs. However, the existing COURSEs with their aims must never dominate the design, only support it. The last pattern of the MODULE IDENTIFIES COURSEs. This pattern is also used to decide, which of the already existing COURSEs can be reused. Then, the attention moves to the design of the IDENTIFIED COURSEs. It is essential, that the already existing COURSEs are revisited and if necessary redesigned.

6 Conclusions

This thesis presents a model, suitable to support integrative education in eGovernment. The model is highly flexible and can be used to create different types of qualification. It has also been applied in a practical scenario and enhanced to provide support in different arrangements.

Although it is the author's opinion, that the model in its current form is suitable for creating integrative qualifications, it should not be viewed as complete. Due to the flexibility of patterns and pattern languages, it is easily possible to enhance the model, based on further needs and experience from the design practice. Particularly the catalogue of PEDAGOGICAL TECHNIQUEs needs to be further developed. In order to provide a higher level of support, the techniques can be further extended and modelled as single pattern languages.

The model concentrates on pedagogical and structural support of the designers. To ensure success of the resulting qualifications in the practice, it is further necessary to consider marketing views. The unique integrative approach offers a number of advantages to the stakeholders, particularly to the learners. However, the unusual approach can also lead to distrust and uncertainty. It is therefore essential to communicate the benefits. For this reason, a suitable marketing model, that fits the character of the approach has to be created. An important part of the marketing strategy is the decision on suitable certification of the education.

To provide an accurate marketing model, a deeper analysis of the stakeholder is necessary. The examination from this thesis is based on generalised views, in order to cover greatest possible spectrum of the stakeholder groups. A marketing model would, however, require information about stakeholders from a specific scenario.

Finally, the model of this thesis aims to maintain highest possible flexibility. However, particularly because it is based on three concrete pedagogical theories, it is unlikely, that it will fit every single scenarios of eGovernment education. It is possible, that the assumptions and structures in the model will contradict the views and experience of various designers. Yet, the author makes the claim, that although the model may not be always used in its full form, it animates the responsible designers and instructors to a deeper involvement in the design and analysis of pedagogical principles as well as of their own values and beliefs.

List of Abbreviations

A2A	:	Administration to Administration
A2B	:	Administration to Business
A2C	:	Administration to Citizen
B2A	:	Business to Administration
BI	:	Business Informatics
C2A	:	Citizen to Administration
eAdministration	:	Electronic Administration
eAssistance	:	Electronic Assistance
eBusiness	:	Electronic Business
eCommerce	:	Electronic Commerce
eDemocracy	:	Electronic Democracy
eGovernment	:	Electronic Government
eLearning	:	Electronic Learning
EU	:	European Union
ICT	:	Information and Communication Technologies
IQeG	:	Integrative Qualification in Electronic Government
IT	:	Information Technology
OECD	:	Organisation for Economic Co-operation and Development
TEMPUS	:	Trans-European mobility scheme for university studies
VCL	:	Virtual Collaborative Learning

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Glossary

adult learners: individuals, who participate in further education, whose main occupation however lies in their employment: p. 12

blended learning: education method, which supports the view, that different methods are suitable for different purposes and advocates the combination other methods: p. 17, 23, 26, 50, 58

business informatics: a research area, seeking to provide connection between other disciplines; the main focus lies on supporting and improving practice in business as well as public administration;: p. 5, 30

distance learning: education method, where the INSTRUCTORS and the learners are divided in space and time; learners are responsible for their learning, based on materials provided by the instructor: p. 50, 58

eAdministration: area of eGovernment, designed to support internal and external interaction in public administration: p. 7

eAssistance: area of eGovernment, designed mainly to provide information for everyday situations: p. 7

eDemocracy: area of eGovernment, designed to support citizens' interest and participation in democratic processes: p. 7

eGovernment: a discipline area, seeking to support processes in public administration with the help of ICT: p. 6, 7, 16, 32

eLearning: education method, which employs ICT, to support learning processes: p. 16, 23, 50, 58

experiential learning: pedagogical method, that sees experience as the most important means of learning: p. 20

external motivation: motivation, that is created or influenced by a particular educational situation, in which the learner participates: p. 48

extrinsic motivation: motivation, that is is caused by external circumstances: p. 48

information systems: systems, used to support the entire process of handling information: p. 5

- initial motivation: motivation, that the learners bring into a particular educational situation: p. 48
- international learners: individuals, who participate in education in other than their home country; can be students as well as adults: p. 13
- intrinsic motivation: motivation, that comes from the learner himself or herself: p. 48
- knowledge: purposeful web of information: p. 5
- lifelong learning: a “cradle-to-grave” educational concept, concerned with all conscious learning activities undertaken throughout an individuals life: p. 16, 21, 26, 35, 70
- long term memory: a memory stage, that contains all information, collected over the life-time of the individual; sometimes further subdivided, for example in semantic (stores knowledge) and episodic (stores experience) or verbal (stores information) and iconic (stores pictures): p. 19
- multi-store memory model: a model of human memory, based on the assumption of several separate storage types: p. 19
- networked learning: an area of eLearning specialised on supporting of connectivity in the learning process through ICT: p. 22, 23, 26, 50, 58
- pattern language: a set of patterns with a particular structure, concerned with the solution to a complex problem ([Alex79], p. 181): p. 28, 29, 37, 46, 51, 54, 60, 67
- pattern: “a unitary pattern of activity and space, which repeats itself over and over again, in any given place, always appearing each time in a slightly different manifestation” ([Alex79], p. 181): p. 26, 28, 36–43, 46, 51, 60, 65, 67, 77
- presence education: education method, that requires the presence of learners and INSTRUCTORS in one place at the same time: p. 50, 58
- recurring education: an educational concept, which promotes regular returns to education throughout the whole life, not only in the beginning: p. 22
- sensory store: a memory stage, that retains sensory images for processing for a small part of a second; also ultra short term memory: p. 19
- short term memory: a memory stage, that retains processed data from the sensory store for several seconds: p. 19

single-store memory model: a model of human memory, based on the assumption of a single storage type: p. 19

stakeholders: individuals, groups or organisations affected by or interested in a particular project, in this case an integrative eGovernment education: p. 9

student: an individual, enrolled in scientific education in an institution of higher education, whose main occupation is the participation in higher education: p. 11

ultra short term memory: memory stage, that retains sensory images for processing for a small part of a second; also sensory store: p. 19

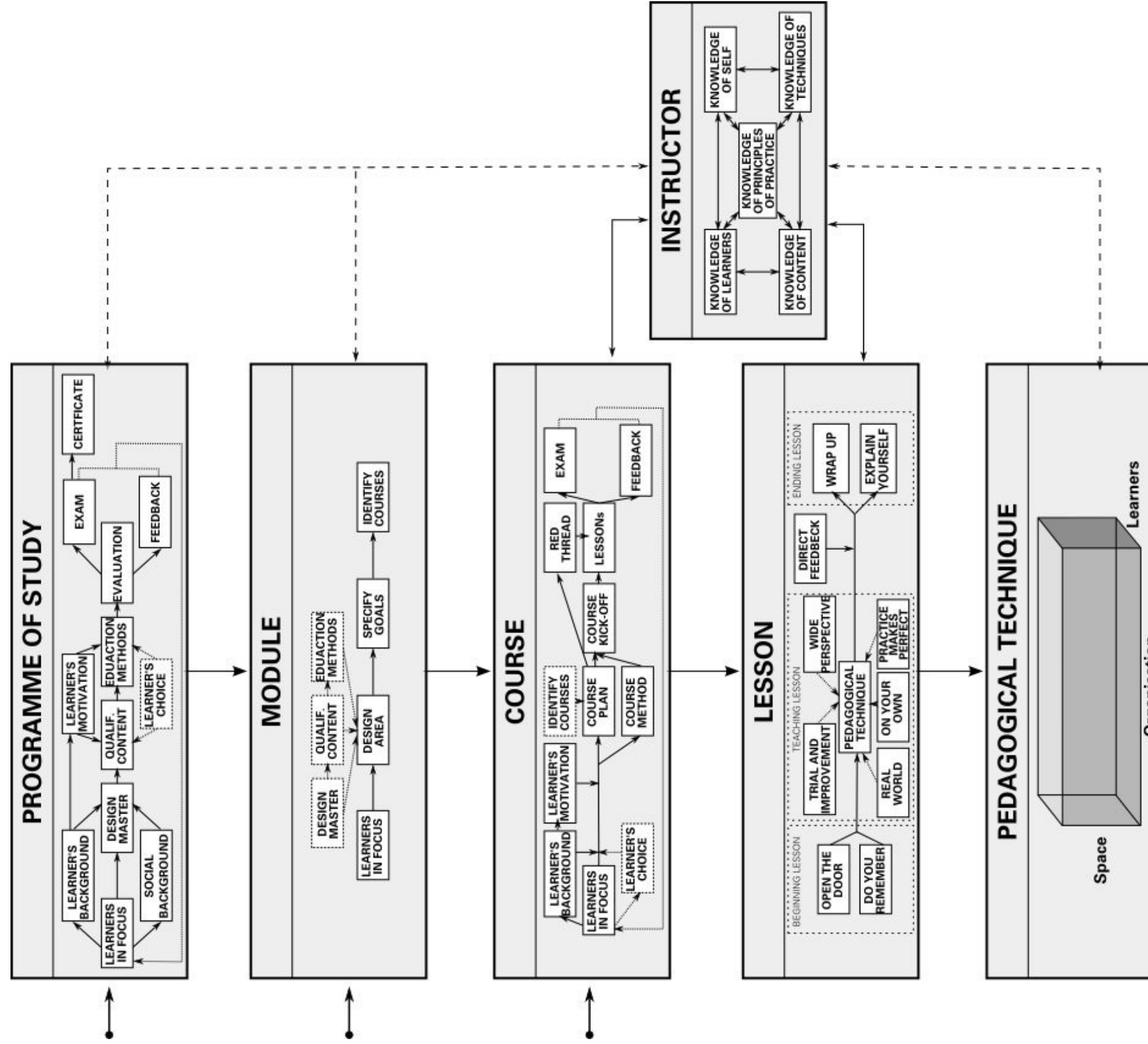
university: an institution, specialised on scientific education and research: p. 15

working memory: sometimes placed between the short term and long term memory; represents the conscious processing of information: p. 19

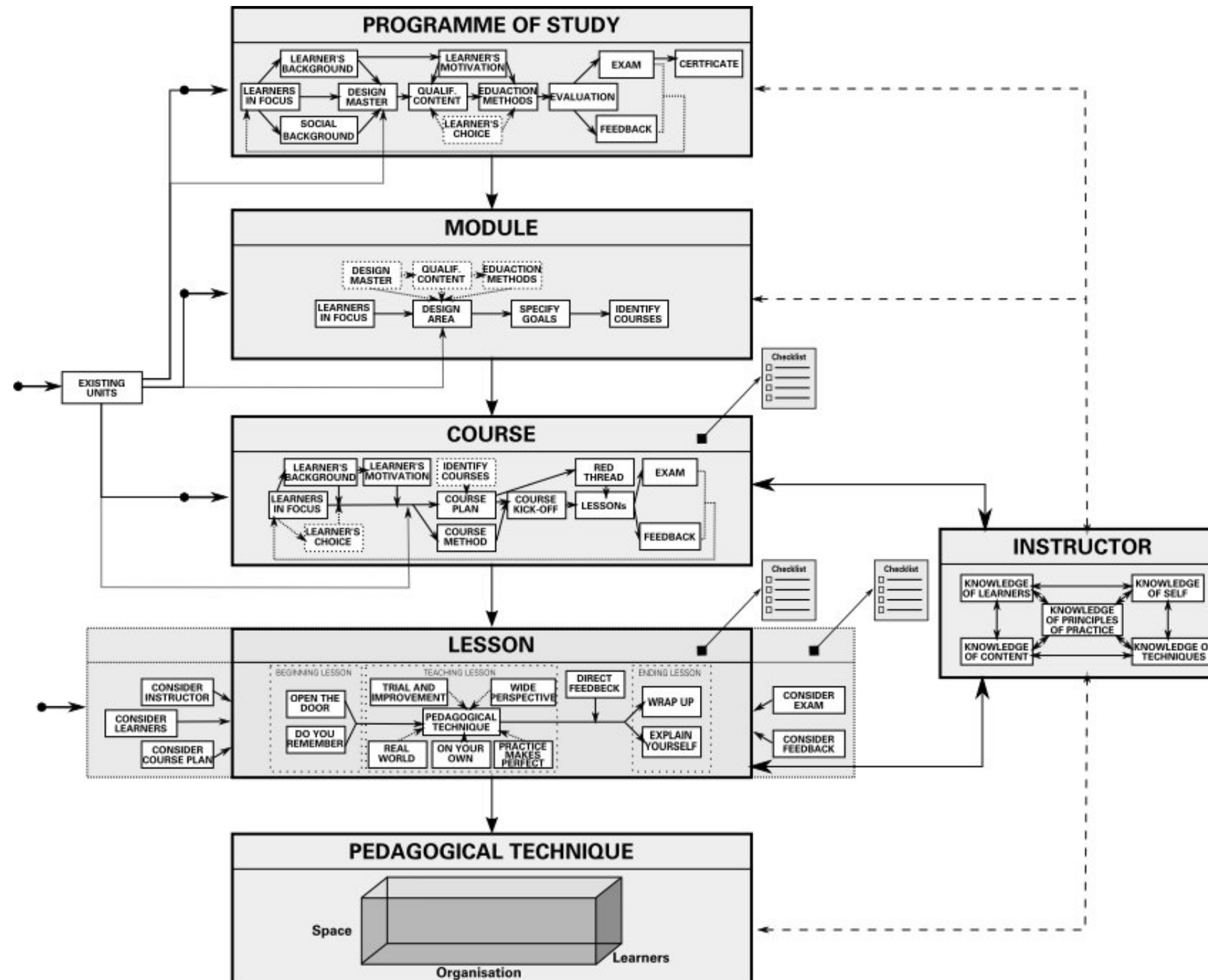
Appendix

Appendix 1:	Design Model	A-1
Appendix 2:	Enhanced Design Model	A-2
Appendix 3:	Educational Design Model Support Tool	A-5
Appendix 4:	Database of PEDAGOGICAL TECHNIQUEs	A-6
Appendix 5:	Checklists	A-7

Appendix 1: Design Model



Appendix 2: Enhanced Design Model



Appendix 3: Educational Design Model Support Tool

Please see the HTML based `support_tool.html` for detailed descriptions of all patterns.

Appendix 4: PEDAGOGICAL TECHNIQUEs

Please see the Microsoft Access based database PEDAGOGICAL_TECHNIQUEs.mdb for all PEDAGOGICAL TECHNIQUEs sorted according to the dimensions learners, organisation and space.

Appendix 5: Checklists

COURSE checklist

1. Who will be the learners participating in the course?
2. What do you know about their background?
3. What is their motivation for attending this course? Would you like to influence this motivation? How do you want to do it?
4. Do you want to involve the learners in the design of the course? Do you want to do it openly or by offering the options to chose from? At what points of the course design do you want to involve them?
5. What is the course aim? What will be the content of the course?
6. What methods do you wish to use (presence education, distance education, eLearning, blended learning)?
7. Make a course plan.
How many lessons will the course have and how long will they be?
What will be the topic of each lesson?
Check that all lessons contribute towards the course plan.
8. Decide, how do you want to make sure, that the learners understand the course plan and how all the lessons contribute towards the course plan.
9. Prepare information, that the learners will need before they attend the course and make them available.
10. Prepare a kick-off session for the learners to make them familiar with the course aims and the course plan.
11. Decide, what kind of exam will the learners have to pass. Decide on its content and revise the content again after the end of the course. Communicate the exam form and focus to the learners.
12. How and when do you wish to give your learners feedback (e.g. verbal, written form, encourage feedback among learners)?
13. How and when do you plan to receive feedback from the learners?

LESSON checklist

1. If needed, include time for introduction of yourself and the students. Choose a suitable form for the introduction.
2. Prepare a short revision of last lesson's topic or ask one of the learners to do it.
3. Check the course plan and decide, what will be the topic of the current lesson and how is it connected to last lesson or the course aim in general. Communicate it to the learners.
4. Select a suitable technique, based on the course method and content.
5. Plan the lesson activity with regard to following points:
 - Are you giving the learners the opportunity to see the topic from different perspectives and see its connections to other topics?
 - Do the learners have a chance to use what they have learnt?
 - Do the learners understand, that problems and mistakes, that occur throughout the practice, contribute to deeper understanding of the topic and will not be sanctioned?
 - Are the exercises or assignments related to real world practices?
 - Are the learners encouraged to seek answers to their questions from other sources (e.g. peers, literature) than yourself?
 - Do the learners receive direct positive as well as negative feedback on their work? Do they have the opportunity and, if needed, the encouragement to give their own feedback to you or other learners?
6. Prepare a recapitulation of the lesson's topic for the end of the lesson or let the learners do it.

Extended LESSON checklist

1. Who will be the learners participating in the lessons? What do you know about their background and motivation? Are they different than learners attending other lessons of this course?
2. Do you have knowledge and understanding of the content or do you need more information? Take some time to reflect upon your views and beliefs about teaching.
3. Revisit your course plan. Is this lesson included in the course plan or was it added later? Is it conform with the course aims? Is the plan still relevant or should it now be changed?
4. Plan the lesson itself. If needed, include time for introduction of yourself and the students. Choose a suitable form for the introduction.
5. Prepare a short revision of last lesson's topic or ask one of the learners to do it.
6. Check the course plan and decide, what will be the topic of the current lesson and how is it connected to last lesson or the course aim in general. Communicate it to the learners.
7. Select a suitable technique, based on the course method and content.
8. Plan the lesson activity with regard to following points:
 - Are you giving the learners the opportunity to see the topic from different perspectives and see its connections to other topics?
 - Do the learners have a chance to use what they have learnt?
 - Do the learners understand, that problems and mistakes, that occur throughout the practice, contribute to deeper understanding of the topic and will not be sanctioned?
 - Are the exercises or assignments related to real world practices?
 - Are the learners encouraged to seek answers to their questions from other sources (e.g. peers, literature) than yourself?
 - Do the learners receive direct positive as well as negative feedback on their work? Do they have the opportunity and, if needed, the encouragement to give their own feedback to you or other learners?
9. Prepare a recapitulation of the lesson's topic for the end of the lesson or let the learners do it.
10. How will the content of the lesson be included in the final exam?
11. How does the feedback you have given and received in the lesson associate with the overall feedback with regard to the whole course?

ERKLÄRUNG

Ich erkläre, daß ich die Arbeit selbständig verfaßt, keine anderen als die angegebenen Quellen und Hilfsmittel benutzt und die diesen Quellen und Hilfsmittel wörtlich oder sinngemäß entnommenen Ausführungen als solche kenntlich gemacht habe.

Dresden, den 02.03.2006

Helena Bukvova