

## Table of contents

1	Introduction .....	1
1.1	Goal of the thesis .....	3
1.2	Methodological approach.....	4
	Excursus: Guideline interview.....	6
1.3	Proceeding structure .....	10
2	The case method in the context of e-learning.....	11
2.1	The case method .....	11
2.1.1	Historic evolution of the case method .....	11
2.1.2	The case: an instructional tool.....	13
2.1.3	Principles of the case method.....	14
2.1.4	Application of the case method.....	15
2.1.5	Obligatory prerequisites of the case method.....	18
2.1.6	Evaluating the case method .....	20
2.1.7	Advantages and disadvantages of the case method.....	22
2.2	Description of e-learning .....	26
2.2.1	Definition of e-learning .....	27
2.2.2	Variants of e-learning.....	29
2.2.3	Strengths and weaknesses of e-learning .....	31
2.2.4	Success-relevant determinants of e-learning.....	33
2.2.5	Criteria catalogue for successful e-learning.....	37
2.2.6	Current developments within the field of e-learning .....	43
2.2.7	E-learning within universities .....	47
2.3	Technology enhanced variants of the case method .....	52
2.3.1	Enhanced case method .....	53
2.3.2	Automated case method.....	56
2.3.3	Assessment of existing variants .....	62
2.4	Precision of the goal and further structure of this thesis .....	64
3	Requirement analysis for the development of the web-based case method.....	67

3.1	Description of the target group.....	67
3.2	Alumni requirements concerning learning scenarios .....	69
3.3	Student requirements concerning virtual learning.....	71
3.4	Expert estimation of potentials and drawbacks of a web-based version of the case method.....	74
3.5	Summary.....	78
4	Characteristics of the case method.....	80
4.1	Learning theoretical basics .....	80
4.1.1	Qualification requirements for today's students .....	80
4.1.2	Principles for effective learning.....	81
4.1.3	Learning theories .....	82
4.1.4	Learning objectives.....	87
4.1.5	Motivation .....	91
4.2	Determination of the characteristics of the case method.....	93
4.2.1	Description of the first characteristic: constructivism .....	95
4.2.2	Description of the second characteristic: problem-based .....	95
4.2.3	Description of the third characteristic: perception of participants .....	96
4.2.4	Description of the fourth characteristic: three phased work-through process.....	99
4.2.5	Description of the fifth characteristic: communication.....	102
4.2.6	Description of the sixth characteristic: collaboration.....	102
4.2.7	Summary .....	103
5	Communication and collaboration within e-learning .....	106
5.1	Communication within e-learning .....	106
5.1.1	Introduction to communication .....	106
5.1.2	Definition of computer-mediated communication .....	110
5.1.3	Theoretical models underlying computer-mediated communication .....	111
5.1.4	Classification of communication systems .....	116
5.1.5	Advantages and disadvantages of computer-mediated communication .....	120
5.1.6	Summary .....	124

5.2	Collaboration within e-learning.....	125
5.2.1	Introduction to teams .....	126
5.2.2	Definition and characteristics of virtual teams.....	132
5.2.3	Variants of virtual teamwork .....	135
5.2.4	Communication in virtual teams .....	137
5.2.5	Success factors for virtual teams .....	139
5.2.6	Strengths and weaknesses of a virtual team.....	141
5.2.7	Differences between traditional and virtual teams .....	144
6	Conceptual design of the web-based case method.....	146
6.1	Structure of the web-based case method.....	146
6.2	General design principles of the web-based case method .....	148
6.2.1	Redesign of the characteristic: constructivism .....	148
6.2.2	Redesign of the characteristic: problem-based.....	151
6.2.3	Redesign of the characteristic: perception of participants.....	152
6.2.4	Redesign of the characteristic: three phased work-through process.....	154
6.2.5	Redesign of the characteristic: communication.....	156
6.2.6	Redesign of the characteristic: collaboration .....	156
6.2.7	Intermediate results .....	157
6.3	Specific design of the characteristic communication .....	159
6.3.1	Success and hindering factors of traditional and virtual communication within the target group.....	160
6.3.2	Distribution of traditional and virtual communication within the web-based case method .....	168
6.4	Specific design of the characteristic collaboration.....	182
6.4.1	General impressions of group work .....	183
6.4.2	Difficulties and problems within group work .....	184
6.4.3	Advantages of virtual group work.....	189
6.4.4	Communication in virtual groups .....	190
6.4.5	Productivity and expenditure of time .....	192

6.4.6	Group dynamics .....	194
6.4.7	Implementation of virtual group work into universities.....	196
6.4.8	Suggestions for virtual group work.....	198
6.4.9	Conclusion .....	200
6.5	Summary .....	201
7	Specific realization of the web-based case method .....	204
7.1	Organizational integration.....	205
7.2	Curricular embedding .....	206
7.3	Work-through process.....	208
7.4	Technology.....	213
8	Conclusion.....	221
	References .....	225
	Appendix .....	247
A.	Identification of the key factors of the traditional case method .....	247
B.	Evaluation of the automated case method .....	261
C.	Alumni requirements concerning learning scenarios .....	269
D.	Student requirements concerning virtual learning.....	279
E.	Success and hindering factors of traditional and virtual communication .....	286
F.	Distribution of traditional and virtual communication within the web-based case method .....	288
G.	Evaluation of virtual group work in a university setting .....	289
H.	Check List for successful virtual communication.....	299
I.	Contents of the CD-ROM.....	301

## List of Figures

Fig. 1.2-1:	Adapted illustration of the phases of a content analysis (according to [Diekmann 02, 494]).....	7
Fig. 1.2-2:	Procedural model of structuring content analysis (according to [Mayring 95, 78]) .....	9
Fig. 2.1-1:	Work-through process of a case (according to [Pilz 74, 143]) .....	16
Fig. 2.2-1:	Components of e-learning.....	28
Fig. 2.2-2:	Systematization of e-learning according to the criteria: social form, area and time (according to [Haas/Hoppe 02, 96]) .....	30
Fig. 2.2-3:	Success factors of an e-learning concept (according to [Kraemer/Sprenger/Wachter 02, 50]).....	36
Fig. 2.2-4:	Expected upcoming relevance of electronic learning forms (according to [Cognos 02 <sup>WWW</sup> ]) .....	45
Fig. 2.3-1:	Screenshot of the automated case method ([Haehling von Lanzenauer/Trela 03, 127]).....	58
Fig. 4.1-1:	Learning theoretical positions (according to [Schulmeister 97, 69]) .....	82
Fig. 4.1-2:	Distinction between problem and task (according to [Edelmann 00, 209]) .....	89
Fig. 5.1-1:	Schematic representation of communication ([Maser 71, 43]).....	107
Fig. 5.1-2:	Four sides of a message (according to [Schulz von Thun 01, 14]) .....	108
Fig. 5.1-3:	Comparison of control levels ([Haywood 98, 17]).....	111
Fig. 5.2-1:	Satisfaction within virtual and traditional teams ([Akademie 02, 19 <sup>WWW</sup> ]).....	143
Fig. 6.1-1:	Basic components of the WBCM including external demands .....	147
Fig. 6.2-1:	Relationship of the main characteristics within the WBCM towards each other....	158
Fig. 6.2-2:	Specific characteristics which need to be redesigned for each implementation of the WBCM .....	159
Fig. 6.4-1:	Types of difficulties while working through the assignments .....	186
Fig. 6.4-2:	Assessment of problems within virtual and traditional group work .....	188
Fig. 6.4-3:	Satisfaction with the cooperation focusing on interpersonal aspects .....	195
Fig. 6.4-4:	Estimation if there are meaningful implementation possibilities for virtual group work into universities .....	197

Fig. 6.5-1:	Derivation of the WBCM.....	201
Fig. 7.3-1:	Illustration of the work-through process of the web-based case method.....	209
Fig. 7.3-2:	Schematic process of the media used within the small group phase .....	211
Fig. 7.4-1:	Technological structure within VORMS .....	215
Fig. 7.4-2:	OpenSMT showing the description of a case (screenshot) .....	217
Fig. 7.4-3:	Group work room within OpenSMT (screenshot) .....	217
Fig. 7.4-4:	OpenSMT indicating where buttons will appear which offer access to CMC (screenshot).....	218
Fig. 7.4-5:	Babylon Chat (screenshot) .....	218
Fig. 7.4-6:	Link to the discussion board within OpenSMT (screenshot) .....	219
Fig. G-1:	Microsoft Netmeeting (Screenshot).....	297
Fig. G-2:	iVisit desktop (Screenshot).....	298
Fig. G-3:	Yahoo Messenger (Screenshot) .....	298

## List of Tables

Table 1.2-1: Overview of empirical studies conducted for this thesis .....	5
Table 2.2-1: Strengths and weaknesses of e-learning .....	31
Table 2.2-2: Pedagogic-didactic success factors of e-learning.....	37
Table 2.2-3: Content success factors of e-learning .....	39
Table 2.2-4: Technological success factors of e-learning.....	40
Table 2.2-5: Organizational success factors of e-learning.....	41
Table 2.2-6: Economic success factors of e-learning .....	42
Table 2.3-1: Examples of used symbols in structured dialogue (according to [Haehling von Lanzenauer/Trela 03, 123]) .....	57
Table 3.3-1: Allocation of interview categories .....	73
Table 4.2-1: Characteristics of the case method.....	103
Table 5.1-1: Allocation of synchronous and asynchronous working forms .....	117
Table 5.1-2: Comparison of success factors of traditional and virtual communication.....	123
Table 5.2-1: Overview of team types ([Kauffeld 01, 16]) .....	127
Table 5.2-2: Success factors of traditional teams .....	128
Table 5.2-3: Reasons for failure of teams.....	131
Table 5.2-4: Key competences for virtual teams ([Teo/Bal 03 <sup>WWW</sup> ] see also [Duarte/Snyder 01, 126ff.]) .....	133
Table 5.2-5: Types of virtual teams ([Teo/Bal 03 <sup>WWW</sup> ] see also [Duarte/Snyder 01, 4ff.])......	135
Table 5.2-6: Major results of electronic communication on virtual teams (according to [DeSanctis/Monge 98 <sup>WWW</sup> ]).....	138
Table 5.2-7: Differences in the perception of problems within virtual teamwork (according to [Haywood 98, 9]).....	142
Table 5.2-8: Differences between traditional and virtual teams .....	144
Table 6.2-1: Grouping of the key characteristics according to general and specific features.....	158
Table 6.3-1: Overview of the empirically evaluated success and hindering factors for traditional and virtual communication.....	165
Table 6.5-1: Emphasized characteristics of the web-based case method.....	205
Table G-1: Results of the questionnaire virtrual group work in a university setting .....	290