Project end report:
pm education mature

**Analysis and benchmarking of
the maturities of
pm education programs**

structure of the education program

competences of graduates

content: project management

ANONYMOUS

pm marketing and services

content: programme management, project portfolio management, management of the project-oriented company

pm research

content: social competences
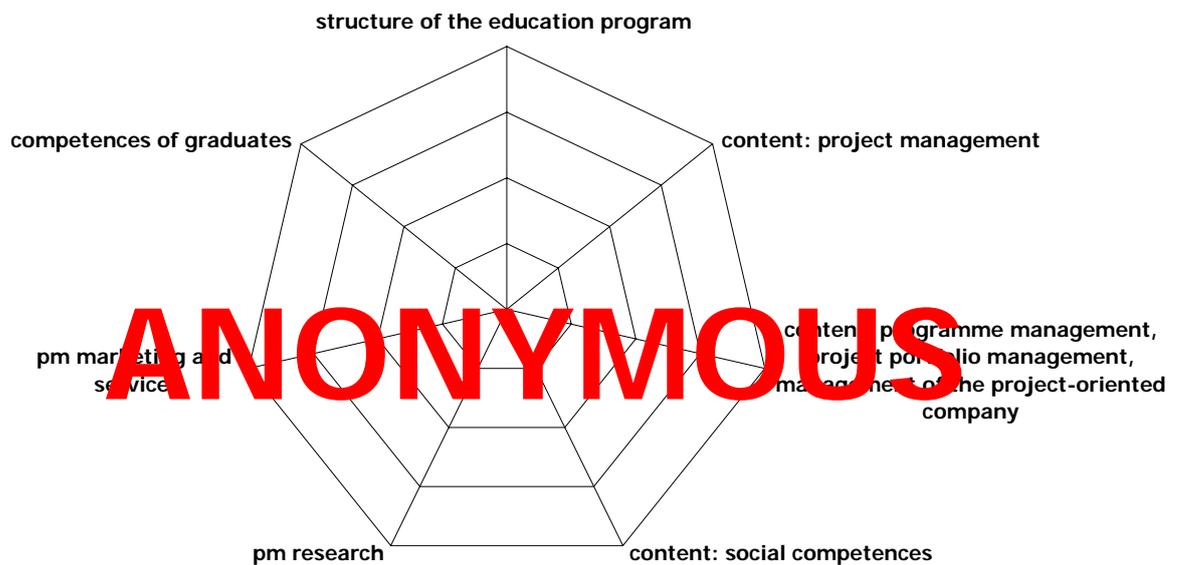
Roland Gareis, Renate Prantner
PROJEKTMANAGMENT **GROUP,**
Vienna University of Economics and Business Administration, Austria
July 2008

Contents

List of figures

List of charts

Executive summary

1.1 Objectives of the *PMUni* project pm education *mature*

This report summarizes the results of the *PMUni* project "pm education *mature*" which has been performed by the PROJEKTMANAGEMENT **GROUP** of the Vienna University of Economics and Business Administration, Austria. The project was performed within the first year of *PMUni* – an international network for professional education and research in process & project management under the scientific direction of Roland Gareis.

The main objectives of the project pm education *mature* were to analyse and benchmark project management education programmes of 9 universities as well as to further develop the maturity model pm education *mature*, provided by the PROJEKTMANAGEMENT **GROUP**, in cooperation with the project partners.

Due to data privacy protection this report has been made anonymous. Therefore only one benchmark and analysis was left in the report while all the other ones were deleted. Hence this report is only an exemplary version of the final report for informative purposes of non-*PMUni* members.

1.2 Research process

From February to March 2008 "pilot assessments" of four pm education programmes were performed. After some adaptations of the maturity model six further pm education programmes were assessed from April to June 2008, applying the adapted maturity model.

The assessments were based on the questionnaire "pm education *mature*", which has been sent to different target groups of the pm education programmes. A first set of data was provided by the head of the pm education programme, the lecturers and administrators, whereas graduates of the pm education programmes added a "client" view on the programme and therefore a second set of data.[1]

For the benchmarking of the pm education programmes a *PMUni* workshop was performed at the happy projects'08 "PROJECTS & SALES" conference, where representatives of the different pm education programmes presented their programmes and jointly discussed the results of the project.

1.3 Overall results of the analysis

- The two different sets of data (internal view by head of programmes, lecturers, and administrators vs. external view by graduates) sometimes led to contradicting results. The interpretation of the results within the context of the pm education programmes therefore is of utmost importance.
- The quality of the results for the single pm education programmes greatly differs due to very different numbers of questionnaires submitted. Two pm education programmes

---

[1] Graduates in the context of this project means students, which have already participated in all evaluated project management courses, but have not necessarily finished their general studies.

have only performed a self-assessment ("self-assessment"), as only lecturers have submitted questionnaires.

- For 8 of the 10 pm education programmes the maturities for the content dimensions were highest for project management, whereas 2 pm education programmes had their highest content maturity ratios in social competences.

- The following maturity model may give an example of the assessment results for one of the pm education programmes, the Education Programme A:
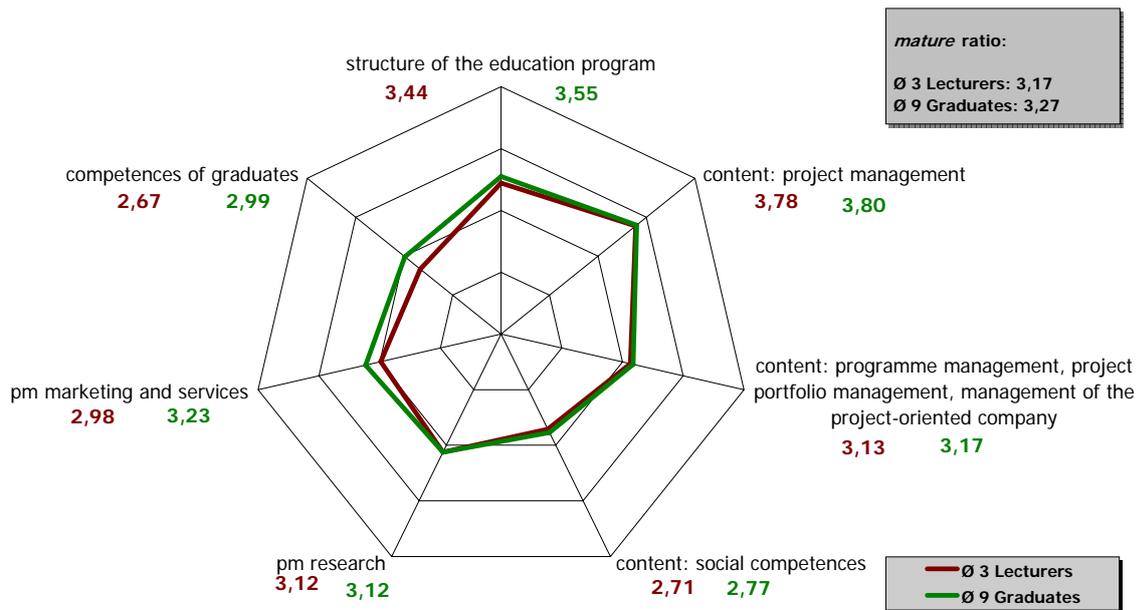
structure of the education program
3,44   **3,55**

mature ratio:

Ø 3 Lecturers: 3,17
Ø 9 Graduates: 3,27

competences of graduates
2,67   **2,99**

content: project management
3,78   **3,80**

pm marketing and services
2,98   **3,23**

content: programme management, project portfolio management, management of the project-oriented company
3,13   **3,17**

pm research
3,12   **3,12**

content: social competences
2,71   **2,77**

— Ø 3 Lecturers
— Ø 9 Graduates

Figure. 1: Analysis of the Education Programme A

1.4 Overall results of benchmarking the pm education programmes

- Explicit pm education programmes have more courses and regarding hours which results in a higher overall maturity ratio than pm education programmes, which are part of a general education programme.

- Lecturers often have evaluated their programmes much more critically than graduates.

- There are some differences in the results between self-analysis of the lecturers and the analysis by the graduates. Some lecturers of the programmes are e.g. convinced of the quality of additional services offered to the graduates (dimension: pm marketing and services). Nevertheless, the services are not explicitly perceived by the graduates.

- For most of the pm education programmes the spider graphs are quite homogenous, although several programmes offer some spikes, e.g. in the dimension content: social competences.

- Programme management, project portfolio management and management of the project-oriented company are almost in every programme taught explicitly already.

2. *PMUni* Project: pm education *mature*

2.1 Context of the *PMUni* project

In the past years the PROJEKTMANAGEMENT **GROUP** of the Vienna University of Economics and Business Administration, Austria has striven to develop a social network in process and project management in order to foster close cooperation between universities, education and research institutions and process and project-oriented companies.

After a series of workshops in Bratislava in the beginning of 2007 - organised in cooperation with the Slovak University of Technology in Bratislava under Prof. Igor Travnik – 14 universities, universities of applied science and companies launched the network *PMUni* in July 2007.

PMUni is an international social network of partners with the objective to promote professional education and research in process and project management by
- Exchanging experiences between education and research institutions as well as process and project-oriented companies
- Creating cooperation potentials between the partners in education and research
- Performing education quality management projects and research projects

The network deals with the topics process management, project management, programme management and management of the process and project-oriented company. By July 2008 the following 14 partners participate in the network:

Country	Institution	Contact Person
Austria	PROJEKTMANAGEMENT **GROUP**, Vienna University of Economics and Business Administration	Roland Gareis
	University of Applied Sciences BFI Vienna	Christian Malus
Denmark	University of Southern Denmark	Pernille Eskerod
France	ESC Lille	Christophe Bredillet
Hungary	Corvinus University of Budapest	Mihaly Görög
	University of Miskolc	
	University of Pannonia	
Ireland	Center of Project Management, University of Limerick	John F. Kelly
Norway	BI Norwegian School of Management	Anne Live Vaagaasar
Romania	National University of Political and Administrative Studies	Alina Bargaoanu
Slovakia	Slovak University of Technology in Bratislava	Jana Sujanova
	University of Economics Bratislava	Stefan Marsina
	University of Zilina	Iveta Kremenova
	2B Cognitus	Rudy Takac

Chart. 1: *PMUni* Partners per July 2008

In the last years the perception of projects as temporary organizations has presented a strategic option for the organizational structure of organisations, which is getting more and more important. This trend towards professional project management leads to a rising importance of professional project management education at universities (of applied sciences). *PMUni*, which is striving to promote professional education and research has therefore organised its first project „pm education *mature*", in order to analyse and benchmark project management education programmes of the existing *PMUni* partners. The project was organised by the PROJEKTMANAGEMENT **GROUP**, Vienna University of Economics and Business Administration under the scientific direction of Roland Gareis. The other participants have been partners of the *PMUni* network.

A pm education programme in the context of this project is defined as either an explicit project management study programme or an extensive part on project management within a general education programme. A minimum of 10 ECTS points for project management courses has been defined in order to ensure comparability between the programmes. Five explicit project management programmes and five pm education programmes as part of a general education programme have been analysed.

2.2   Objectives of the *PMUni* project

The objectives of the *PMUni* project were:
- Project management education programmes of about 9 universities analysed and benchmarked.
- Knowledge transfer between cooperating universities achieved.
- Further development of the model "pm education *mature*" achieved.
- Relationships between *PMUni* cooperation partners strengthened.

2.3   Structure of the *PMUni* project

The project was started on the 1st September 2007 and was finished on the 15th July 2008. The *PMUni* project was organised by the PROJEKTMANAGEMENT **GROUP** at the Vienna University of Economics and Business Administration.

The project structure was as follows:
- Scientific director & project owner: Roland Gareis
- Project manager: Renate Prantner
- Project partners:

Please note: The details of the programmes had to be deleted due to reasons of data privacy protection. The structure of the analysis of each education programme follows 4.2.1.

More *PMUni* partners took place in the development of the questionnaire and maturity model, although due to time and resources they were not able to also perform the analysis. Out of the 9 participating universities one university took the possibility to get two pm education programmes analysed.

2.4 Research process of the *PMUni* project

At the *PMUni* Workshop in Denmark from the 26th to 27th November 2007 the project partners jointly developed the maturity model "pm education *mature*" and the underlying questionnaire on a basis maturity model provided by Roland Gareis.[2] In a first phase pilot assessments of the following four pm education programmes have been conducted:

The details of the programmes had to be deleted due to reasons of data privacy protection.

After minor adaptations of the questionnaire the following six pm education programmes have been assessed:

The details of the programmes had to be deleted due to reasons of data privacy protection.

For the assessment the concept of 360° feedback has been applied. Therefore the head of programme, lecturers and administrators have formed one set of data and graduates have formed a second set of data although using the same questionnaire. In the context of this research project graduates are defined as students, who have successfully passed all project management courses of the analysed pm education programme.

The results of the assessments have been used to benchmark the pm education programmes in a workshop at the happy projects'08 "PROJECTS & SALES".

---

[2] In a former project in 2003 the PROJEKTMANAGEMENT **GROUP** had already developed a first draft of a maturity model for pm education programmes, which was jointly further developed by the partners in the project pm education *mature*.

3. Maturity Model „pm education *mature*"

The maturity model for pm education programmes has been jointly developed by the project partners during the *PMUni* Workshop on the 26th and 27th November 2007 in Denmark on a basis provided by Roland Gareis and is based on the questionnaire „pm education *mature*".

The questionnaire has 32 questions in seven groups, which are structured according to the dimensions of the model "pm education *mature*". The filling-out of the questionnaire by the head of the programme, the lecturers and the administrators of the pm education programmes have to be considered as a self-analysis. The filling-out of the questionnaire by the graduates adds an external "client" view.

As a major further development of the original questionnaire, not only the coverage of project management methods is asked by the target groups, but also whether the methods have been applied in class in order to gain experience by the graduates.
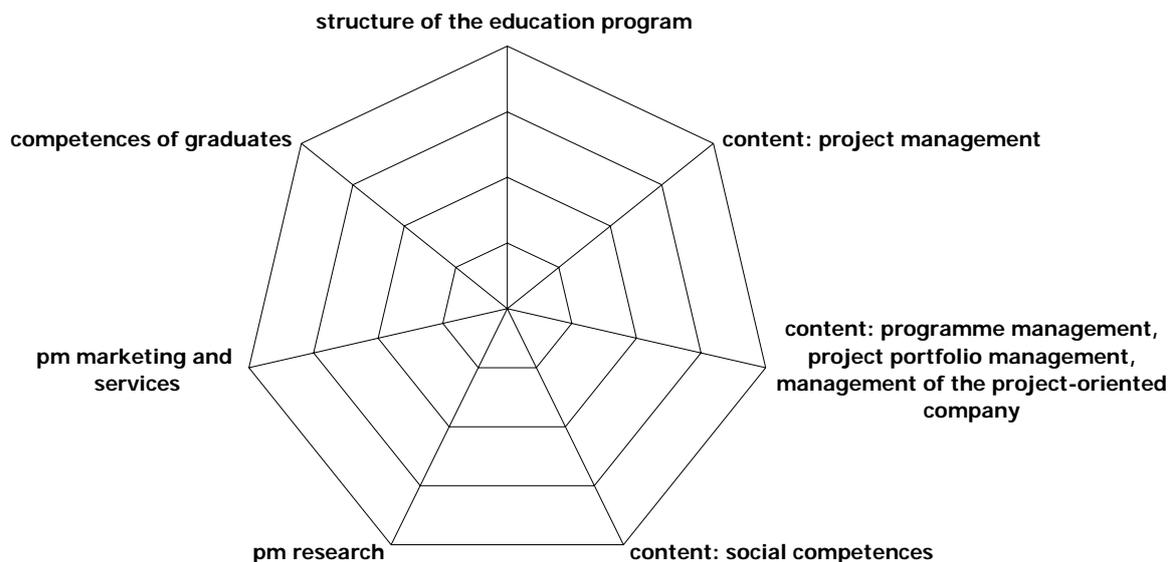
Figure. 2: Maturity Model pm education *mature*

The seven dimensions of the model (see figure 2) shall now be described in more detail:

structure of the education programme (5 questions)
This group of questions deals with the objectives of the education programme, qualification and competence of the lecturers teaching, didactic and evaluation methods applied as well as infrastructure provided for the programme.

content: project management (7 questions)
Besides questions about definitions of projects, the project management process also methods applied in the different project management sub-processes such as project start, project coordination, project controlling etc. are included.

content: programme management, project portfolio management, management of the project-oriented company (11 questions)

This group of questions deals with programme management, project portfolio management and aspects of the management of the project-oriented company, such as e.g. process management.

content: social competences (2 questions)

This question group includes presentation and moderation methods, as well as conflict management and teambuilding methods etc.

pm research (5 questions)

This chapter deals with project management research conducted by the underlying institution. PM publications, research events and workshops are also included.

pm marketing and services (2 questions)

This group of questions deals with additional services offered to the graduates by the pm education programme such as pm awards, pm events, pm networks, access to pm jobs etc.

competences of graduates (2 questions)

The competence of the graduates, in this *PMUni* project defined as knowledge and experience of a person, is evaluated in this part of the questionnaire.

The seven dimensions of the questionnaire have different weights according to the number of questions per dimension and the importance of the dimensions in the education programme. The individual questions in each question group have the same weight. If, for example, there are five questions in a question group each question will be weighted with 20%. The following weights are used for the calculation of the pm education *mature* ratio:

Dimensions of the model „pm education *mature*"	Scaling
structure of the education programme	10%
content: project management	20%
content: programme management, project portfolio management, management of the project-oriented company	20%
content: social skills	10%
pm research	10%
pm marketing and services	10%
competences of graduates	20%
	100%

Chart. 2: Scaling of dimensions of the model pm education *mature*

For each question an answer code had to be filled in, 1 meaning "never – very little" representing the lowest level of maturity, whereas 5 meaning "always – very much" represented the highest level of maturity. The following answer codes were used for the questionnaire pm education *mature*:

1	Never	Very little	not defined	very low	Not applied	Not covered	Not applied
2	Seldom	Little	Poorly defined	Low	Just few applications	Briefly mentioned	Seldom applied
3	Sometimes	Average	Ok defined	Ok	Some applications	Covered	Sometimes applied
4	Good	Much	Well defined	High	Applied for projects of low complexity	Comprehensively covered	Often applied
5	Always	Very much	Very well defined	Very high	Applied for projects of high complexity	Very comprehensively covered	Very often applied

Chart. 3: Answer codes for the questionnaire pm education *mature*

4. Assessment of pm education programmes

4.1 Analysed pm education programmes

Ten pm education programmes, differentiated in explicit pm programmes and part of general programmes, have participated in the *PMUni* project pm education *mature*. A minimum of 10 ECTS had to be proven in order to participate in the project.

Title of Programme	Type	University
Education Programme A	Explicit PM programme	1
Education Programme B	Explicit PM programme	2
Education Programme C	Explicit PM programme	3
Education Programme D	Explicit PM programme	4
Education Programme E	Explicit PM programme	5
Education Programme F	Part of general programme	6
Education Programme G	Part of general programme	7
Education Programme H	Part of general programme	8
Education Programme I	Part of general programme	9
Education Programme J	Part of general programme	1

Chart. 4: Analysed pm education programmes

The following chart shows the numbers of submitted questionnaires for each pm education programme. 78 questionnaires were submitted in total.

Title of Programme	Lecturers	Graduates	Total
Education Programme A	3	9	12
Education Programme B	2	0	2
Education Programme C	3	2	5
Education Programme D	3	3	6
Education Programme E	3	3	6
Education Programme F	7	0	7

Education Programme G	**1**	**3**	**4**
Education Programme H	**2**	**4**	**6**
Education Programme I	**2**	**2**	**4**
Education Programme J	**7**	**19**	**26**

Chart. 5: Number of submitted questionnaires per pm education programme

The benchmarking between the pm education programmes shall enable to analyse and interpret similarities and differences between the programmes in order to foster a knowledge transfer between the project partners. In the framework of a benchmarking workshop, the project partners had the possibility to partly present the results of their pm education programmes and to discuss the results with each other.

The quality of the results for the single pm education programmes differs widely, due to different numbers of questionnaires submitted per pm education programme.

4.2 Results per pm education programme

In the following sub chapters the overall and detailed results for each pm education programme shall be displayed in greater detail due to the structure of the questionnaire pm education *mature*. Primarily the set of data, obtained by the lecturers shall be taken into account for interpretation.

The quality of the regarding data differs greatly per pm education programme and target group of the questionnaire. The detailed results for some questions have been combined due to clarity reasons. Further information for referencing can be found in the detailed benchmarking charts of lecturers and graduates in the annex.

4.2.1 Education Programme A

Name of institution: 1
Existing since   1983 - 2006
Programme type: Explicit pm programme
Degree:
Duration: 5 modules à 5 days
Students per year: 30
ECTS in pm courses: 25 ECTS
Names of pm courses: Organisational design of projects, Project start, Resource planning and Scheduling, Project costs, Business case, Project controlling, International Marketing, Management of the project-oriented Company, Leading of project teams, Methods for successful project close-down
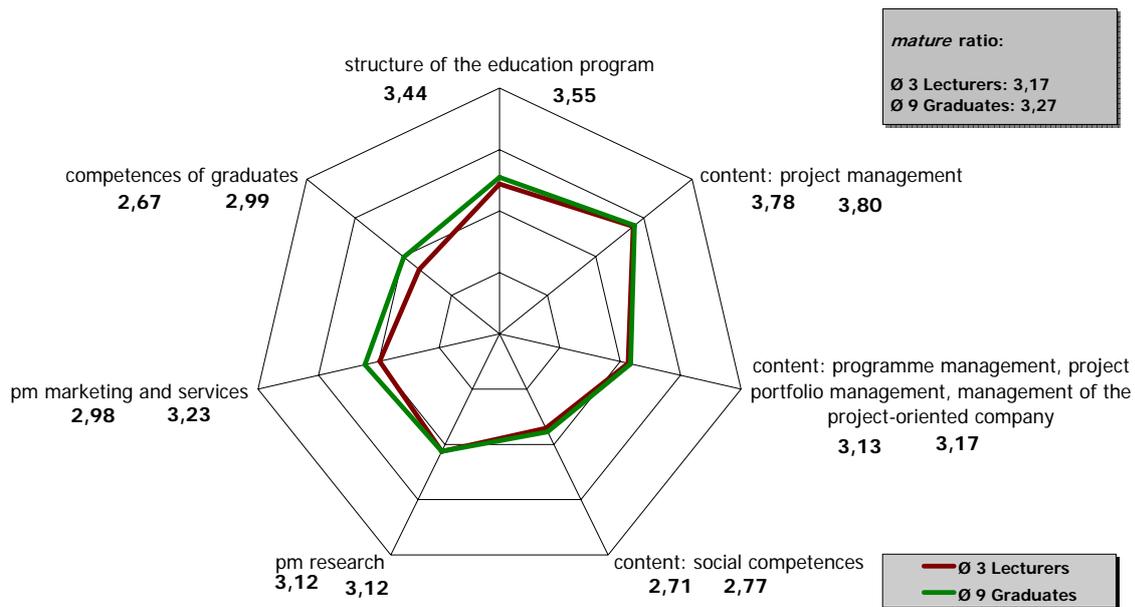**Respondents:**   3 lecturers (incl. head of programme) and 9 graduates

Figure. 3: Maturity for the Education Programme A

4.2.1.1 Overall results

- The spider graph is very homogenous, only slight differences in perceptions of graduates and lecturers can be detected.
- The overall maturity ratio for the programme is 3,17 (self-assessment by the lecturers) and 3, 27 (external assessment by the graduates).
- The highest maturities of the pm education programme due to the lecturers are given in the dimensions "content: project management", "structure of the education programme" and "content: programme management, project portfolio management, management of the project-oriented company".
- The Education Programme A shows the lowest maturity in the dimension "content: social competences".

4.2.1.2 Detailed results

A Structure of the education programme

A.1.1 Objectives of the pm education programme

The education objectives, objectives of the courses and working forms are well defined. Career opportunities are considered to be ok, whereas additional services offered are poorly defined for the lecturers, whereas well defined for the graduates.

A.1.2 Lecturers

The project management competence of the lecturers in the Education Programme is considered very high by graduates and lecturers. Although the didactic competences of lecturers, the quality of case studies used and support by the lecturers is good, the qualification of the lecturers is seldom communicated.

A.1.3 + 1.4 Didactic methods and evaluation process

Theoretical inputs and training on the project are often applied in the Education Programme. eSupported self-study and group work is better evaluated by the lecturers than the graduates. Group evaluations (besides single evaluations) and written evaluations (besides oral evaluations) are often used. Continuous evaluation, the evaluation of theoretical knowledge and the evaluation of the ability of the graduates to apply knowledge on instructor supplied cases are sometimes part of the programme.

A.1.5 Infrastructure and special software

Software on project management (e.g. MS Project etc.) is often applied and an e-learning platform sometimes facilitates learning in the programme. The usage of process management and project management simulation software is never to seldom offered.

B Content: project management
B.1.1 Definitions of projects and project management

Project definitions, project types, the project management process and the differentiation between projects and small projects are very comprehensively to comprehensively covered in the Education Programme. Different project management approaches are only sometimes considered.

B.1.2 + 1.3 Coverage and application of PM methods for the project start and planning process

Methods for project planning, project context analysis, project organisation are very comprehensively covered as well as applied for projects of low complexity.

B.1.4 + 1.5 Coverage and application of PM methods for other PM processes

In the Education Programme the project controlling process, resolution of a discontinuity process and project close-down process are taught on a very comprehensive basis. Methods for the resolution of a project discontinuity and project close-down are applied for projects of low complexity. Project coordination and controlling methods are only sometimes practised.

B.1.6 + 1.7 Coverage and application of methods for the assurance of management quality in projects and programmes

Methods for management consulting and auditing are taught in the Education Programme, but only few applications of the methods are organised.

C Content: programme management, project portfolio management, management of the project-oriented company

C.1.1 + 1.2 Programme, programme management and application of programme management methods

Programme definition, programme types and the programme management process are very comprehensively covered. Methods for the design of the programme organisation, the programme start, programme controlling and programme close-down are not only very comprehensively covered, but also often applied by the graduates.

C.1.3 + 1.4 Project portfolio management and application of methods for project portfolio management

The assignment/initialisation process, regarding assignment/initialization methods and methods for project portfolio management are very comprehensively taught, whereas management of chains and networks of projects are taught only comprehensively. The methods are sometimes practised by the graduates within the Education Programme.

C.1.5 Organisational design of the project-oriented company

The PM Office, the Project Portfolio Group and the specific strategy of the project-oriented company ("Management by projects") play a very important role in the Education Programme and are more comprehensively taught then specific culture and infrastructure of a project-oriented company.

C.1.6 + 1.7 Personnel management of and personnel management processes in the project-oriented company

Roles in the project-oriented company and competences of project managers are covered on a more extensive basis than career paths, certifications and incentive systems for project personnel. The single sub-processes of the personnel management process are only briefly mentioned due to the lecturers. For the graduates, recruiting project managers and developing project management personnel are mentioned much more often.

C.1.8 + 1.9 Coverage and application of personnel management methods in the project-oriented company

The personnel management methods are briefly mentioned to covered for the lecturers and graduates, but only a few to none applications are possible within the Education Programme.

C.1.10 + 1.11 Coverage and application of process management in the project-oriented company

Process definitions and process types are taught in the Education Programme, as well as macro- and micro-process management and the process organisation. Nevertheless methods for macro- and micro-process management are only seldom applied by the graduates.

D Content: social competences

D.1.1 + 1.2 Coverage and application of social competences

Presentation methods, moderation methods, conflict management methods, management of emotions and teambuilding methods are only covered in the Education Programme. Self-

understanding of the project manager plays an important role and is therefore comprehensively covered by the lecturers. Teambuilding methods are often applied in the Education Programme, presentation and moderation methods are at least sometimes applied. Diversity management methods are not practised.

E Pm research
E.1.1 + 1.2 Project management-related research projects and publications
The Education Programme has been organised by University 1. In the past 2 years the University 1 has organised more than 6 research projects dealing with project management in general and the management of the project-oriented company. Some (4-7) presentations at conferences, other papers and contributions in conference proceedings as well as a few (1-3) books, book chapters and peer-reviewed papers in academic journals have been published.

E.1.3 + 1.4 Project management-related theses and research events
More than 15 master and MBA theses have been developed at University 1 as well as 1-3 PhD theses. 1-2 project management research conferences and research workshops have been organised in the last 2 years.

F Pm marketing and research
F.1.1 + 1.2 Services and additional PM services offered by the education programme
University 1 has often offered project management events to its graduates and has actively promoted "Project manager" as a profession in Austria. Newsletters are sometimes offered to the graduates and the Education Programme partly serves as preparation for the certification as project manager. The access of the graduates to PM events and seminars and sometimes to project management jobs is actively encouraged by University 1. Excursions to project-oriented companies and project management internships are seldom offered.

G Competences of graduates
G.1.1 + 1.2 Project management knowledge and experience of the graduates after the pm education programme
After graduating from the Education Programme the students have a very extensive knowledge of projects and project management, as well as a good knowledge of the organisational design of the project-oriented company. By applying methods in the courses, the graduates have gained much experience in projects and project management. In all other topics, only little experience has been gained. Generally lecturers of the Education Programme tend to evaluate the knowledge more critically than the graduates themselves.

4.2.2 Education Programme B - J
Education Programme B-J is not shown in this report.

5. Benchmarking of pm education programme
The ten participating pm education programme are now being benchmarked with each other. The two different sets of data (internal view by head of programme, lecturers, and

administrators vs. external view by graduates) sometimes led to contradicting results. The interpretation of the results within the context of the pm education programme therefore is of utmost importance.

The ranking of the pm education programme is based on the overall maturity ratio. The explicit pm education programme are marked in blue. The following chart shows the overall maturity ratio for the pm education programmes, based on the self-assessment, which is the view of the head of programme, lecturers and administrators.

	Education Programme H Ø 3 Lecturers	Education Programme G Ø 1 Lecturer	Education Programme I Ø 2 Lecturers	Education Programme F Ø 7 Lecturers	Education Programme J Ø 7 Lecturers	Education Programme E Ø 3 Lecturers	Education Programme A Ø 3 Lecturers	Education Programme B Ø 2 Lecturers	Education Programme C Ø 3 Lecturers	Education Programme D Ø 3 Lecturers
mature ratio	1,98	2,42	2,51	2,55	2,91	3,15	3,17	3,51	3,76	4,49
structure of the education program	2,93	2,98	3,60	3,30	3,38	3,54	3,44	3,85	4,16	4,46
content: project management	1,80	3,10	3,35	2,58	2,99	3,26	3,78	3,80	3,90	4,59
content: programme management, project portfolio management,	1,54	2,40	1,31	2,51	2,59	2,77	3,13	3,22	3,34	4,36
content: social competences	2,12	1,44	2,56	2,44	2,02	4,50	2,71	4,31	4,25	4,44
pm research	2,21	2,58	1,92	2,06	3,12	2,40	3,12	2,42	2,92	4,48
pm marketing and services	1,72	1,40	2,85	2,22	3,66	2,80	2,98	3,62	3,67	4,90
competences of graduates	1,94	2,62	2,25	2,75	2,73	2,94	2,67	3,37	4,31	4,25
Part A: Structure of the education program	2,93	2,98	3,60	3,30	3,38	3,54	3,44	3,85	4,16	4,46

Chart. 6: Maturity ratios of the pm education programmes (head of programme, lecturers, administrators)

The overall maturity ratios for the explicit pm programmes are situated between 3,15 and 4,49. Also the pm education programmes, which are part of a general programme, are within a rather small benchmark, between 1,98 and 2,91.

	Education Programme H Ø 4 Graduates	Education Programme I Ø 2 Graduates	Education Programme G Ø 3 Graduates	Education Programme C Ø 2 Graduates	Education Programme J Ø 19 Graduates	Education Programme A Ø 9 Graduates	Education Programme E Ø 3 Graduates	Education Programme D Ø 3 Graduates
mature ratio	2,09	2,63	3,01	3,12	3,27	3,27	3,49	4,35
structure of the education program	2,79	2,31	3,58	3,55	3,55	3,55	4,14	4,34
content: project management	1,74	3,41	3,39	3,62	3,57	3,80	3,83	4,56
content: programme management, project portfolio management,	1,72	2,52	3,50	3,15	3,29	3,17	3,22	4,18
content: social competences	2,81	2,00	3,19	2,12	2,53	2,77	5,00	4,00
pm research	2,21	1,92	2,58	2,92	3,12	3,12	2,40	4,48
pm marketing and services	1,37	2,25	1,70	2,30	3,34	3,23	2,00	4,72
competences of graduates	2,44	3,56	2,56	3,81	3,23	2,99	3,81	4,19
Part A: Structure of the education program	2,79	2,31	3,58	3,55	3,55	3,55	4,14	4,34

Chart. 7: Maturity ratios of the pm education programmes (graduates)

Only 8 of 10 pm education programmes have submitted also questionnaires filled out by graduates, therefore adding a „client view". For benchmarking purposes the huge differences between the different numbers of submitted questionnaires have to be considered and influence the quality of the results.

Overall benchmarking results:
- Explicit pm education programmes have more courses and regarding hours which results in a higher overall maturity ratio than pm education programmes, which are part of a general education programme.
- Lecturers often have evaluated their programmes much more critically than graduates.
- There are some differences in the results between self-analysis of the lecturers and the analysis by the graduates. Some lecturers of the programmes are e.g. convinced of the quality of additional services offered to the graduates (dimension: pm marketing and services). Nevertheless, the services are not explicitly perceived by the graduates.
- For most of the pm education programmes the spider graphs are quite homogenous, although several programmes offer some spikes, e.g. in the dimension content: social competences.
- Programme management, project portfolio management and management of the project-oriented company are almost in every programme taught explicitly already.

Detailed benchmarking results:

For more detailed results, please use for referencing the detailed benchmarking charts of lecturers and graduates in the annex. Due to very different number of ECTS, a detailed benchmarking should be made on the level of the single questions.

References

Gareis R., Huemann M. (2001): Assessing and Benchmarking Project-oriented Societies, in: *Project Management – International Project Management Journal*, Project Management Association Finland, Norwegian Project Management Forum, Vol. 7, No. 1. 2001, p 14 – 25.

Gareis, R., Huemann, M. (2008): Maturity Models for the project-oriented Company, in: *The Gower Handbook of Project Management*, Turner J.R. (ed), Gower, Aldershot, 2007.

Gareis, R. (2005). Happy Projects! (English Version), Manz, Vienna, 2005.

Gareis, R., Gruber, C. (2003): Assessing und Benchmarking Projektmanagement-Ausbildungsprogramme in Österreich, 2003.

Hallemann, M. (2005): Analyse projektmanagement-bezogener Dienstleistungen in Öesterreich (diploma theses), Vienna, August 2005.

Luhmann, N. (1995): Social Systems, Stanford University Press, Stanford, California, 1995.

PROJEKTMANAGEMENT **GROUP** (2003): Fragebogen: Assessment PM Ausbildungs-programme, Vienna, March 2003.

PROJEKTMANAGEMENT **GROUP** (2006): Questionnaire: Maturity of the project-oriented Company, Vienna, February 2006.

von Glasersfeld, E. (1992): Konstruktion der Wirklichkeit und des Begriffs der Objektivität, in: *Einführung in den Konstruktivismus*, Gumin H., Meier H.(eds), Munich 1992.

Annex

Questionnaire: pm education *mature*
Benchmarking Chart: Lecturers
Benchmarking Chart: Graduates