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**The Gap between what is Needed and Offered in Project
Management Education**

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The Gap between what is Needed and Offered in Project Management Education

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Abstract

A process focus for project management education is suggested based on a small qualitative sample as an alternative to competence focus. Commercial offerings of project management education are more focused on processes than competences. Review of the courses reveals that there is almost no offering for alongside, medior or senior project managers and that the scarce competences incorporated in the courses do not match with findings from previous research. There are several strong suggestions of a very weak curriculum consistency, like universal application, a diverse target audience and a strong bias towards planning, supporting earlier critique on project management education.

Keywords: Competence education, process education, project management education, requirements analysis, curriculum consistency.

Introduction

Numerous studies have been done in the field of project management on required competences (Nijhuis, Vrijhoef, & Kessels, 2015). There is critique on how these studies have been performed. Almost none of them is related to any of the standards in the project management field or builds on previous research (Nijhuis, 2015; Nijhuis, Vrijhoef, & Kessels, 2016). Furthermore, the essence of project management is obscured by asking for importance instead of criticality. Areas researched show a bias towards specific parts of the scope of project management. A new study, focusing on criticality, revealed that project management across different contexts do not share a clear set of competences. Even in comparable contexts, there is no agreement on the set of critical competences. A focus on processes is suggested as a solution to design curricula for learning and improving project management competence (Nijhuis et al., 2016). This suggestion is tested by a qualitative research among experienced project managers.

There has been critique on project management education (Berggren & Söderlund, 2008), without being specific. This paper reports on a review of commercial offerings of project management education in the Netherlands.

Project Management Competences and Processes

Project management is a difficult subject to teach and the available space in curricula to teach project management is limited (Ellis, Thorpe, & Wood, 2003). The signaled lack of agreement between educators on what makes a good project manager (El-Sabaa, 2001) is reflected in publications about project management education, showing a diversity of learning goals and methods (Nijhuis et al., 2016). Numerous studies into project management competences show a very diverse and difficult to compare set of competences, suggesting the need for taxonomy of project management competences (Nijhuis et al., 2015).

Using a taxonomy developed for management research (Simonet & Tett, 2013; Tett, Guterman, Bleier, & Murphy, 2000), a study among experienced project managers showed some but little comparison with the aggregated results of twenty-five earlier studies into project management competences (Nijhuis et al., 2016). One attempt to prove context dependability of (necessary) project management competences failed due to lack of enough respondents (McHenry, 2008). A previous study found that even among groups of comparable contexts, there is much difference of opinion in what the critical competences are, dismissing the possibility of reaching a clear set of competences critical for project management (Nijhuis et al., 2016).

There are numerous definitions of competence (Crawford, 2005), suggesting that project management competence could be defined as 'the ability to manage projects'. Split into parts like ability to 'initiate', 'plan', 'implement', 'control' and 'close' projects' would give education a little more guidance of

what to incorporate. Furthermore, as the ISO standard on project management clearly shows, there are several subject groups to discern when it comes to project management, like stakeholder, risk, time, communication, ..., constructing a matrix of potential process competences like 'ability to implement risk management' or 'ability to treat risks' (Normcommissie 381236 "Projectmanagement", 2012). The matrix contains 39 processes, unevenly spread across the matrix. The results in a previous study using focus groups of experienced project managers showed a quick convergence on subject groups and processes (Nijhuis, Kessels, & Vrijhoef, 2015) suggesting educational focus could be found in using these processes. Greater reduction and focus can be achieved focusing on the ten subject groups.

A Process Focus?

Methodology

Based on focus group discussions with experienced project managers (Nijhuis et al., 2015) the ISO subject groups are rephrased to: stakeholder management, team management, scope management, communication management, risk management, integration management and controlling the project. The notable differences are mentioned in Table 1.

Table 1. *Notable differences in used groups*

ISO subject group	New group	Differences
Resource	Team	Other resources (materials, subcontractors) moved to controlling the project
Integration	Integration	Including integration with the organization
Cost, Time, Quality, Procurement	Controlling the project	Combining these four groups

The group of experienced project managers that participated in the previous research were asked to fill in the questionnaire containing 75 competences again (digitally) with a focus on junior project managers. They were also asked to prioritize the seven groups mentioned for junior project managers. The prioritization and competences for senior project managers were already known from the previous research (Nijhuis et al., 2015). The participating project managers were asked once through e-mail. No reminder was sent.

A second group of experienced project managers received a presentation of preliminary findings of the previous research. They were asked to fill in the questionnaire of 75 competences for junior project managers. In both cases, criticality was emphasized: only mark a competence if the junior project manager needs to be better at this specific competence than others in the project, not if you consider it important. This method of questioning removes

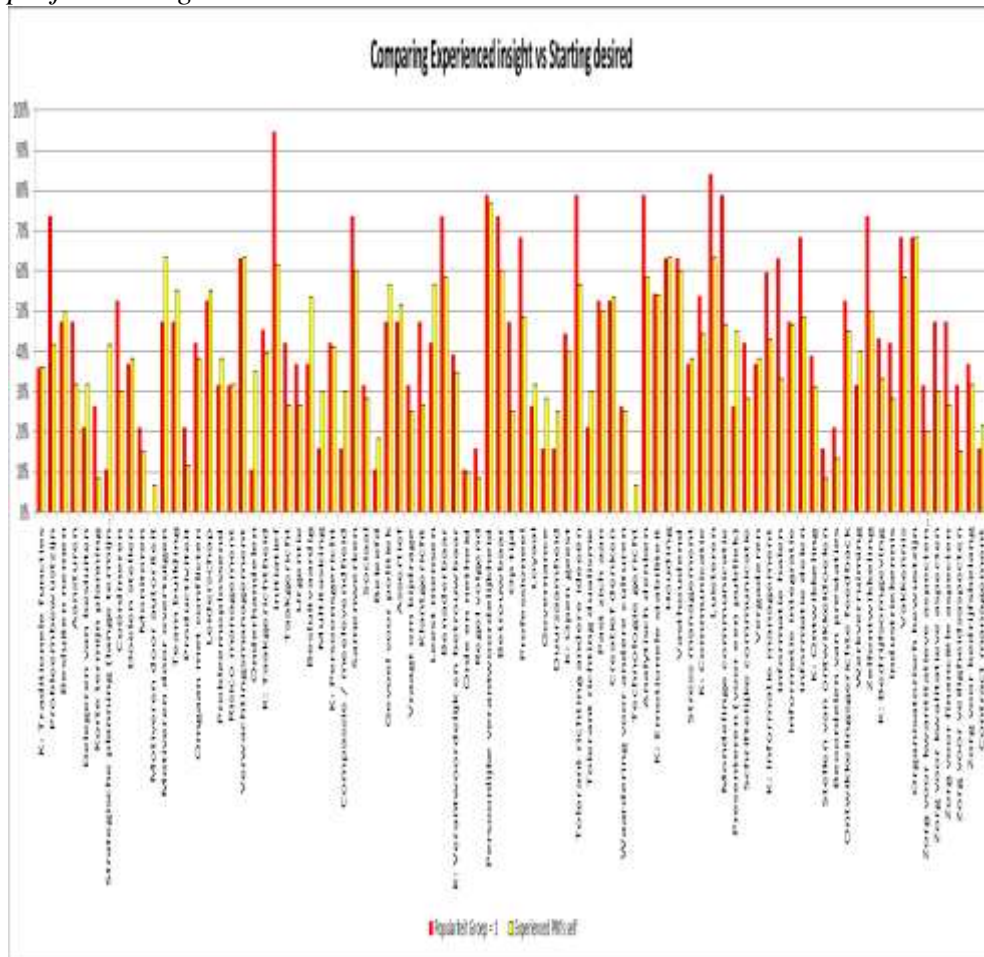
the competences that are generic from the results, like 'basic computer skills', which otherwise would score very high on any questionnaire (Nijhuis, 2015).

Results

Eight experienced project managers supplied a prioritization and nineteen supplied a questionnaire of competences critical for junior project managers.

There appears to be very little difference in competences between junior and senior competences (see figure 1): a vast majority scores comparably. Differences of greater than 25% are found in five competences: problem awareness, initiative, oral communication, information seeking and strategic planning. Only the last one scores less for junior project managers than for experienced project managers. In order to 'grow' from junior to experienced level a project manager needs to become better at this competence and less on the four others.

Figure 1. Comparing Critical Competences for Junior and Experienced project managers



Discussion

This research was not set out to find statistical significant results - only to confirm whether educational focus could be found using a process focus instead of competences. Although from a very small sample, these results seem to confirm this notion. Looking at competences, there is hardly any difference between junior and experienced project managers and the notable differences are counter intuitive. The differences between the prioritization of the groups of processes are quite logical. It makes sense to deploy junior project managers on projects with less emphasis on stakeholder management.

A process focus for education compared to a competence focus could be logical based on these results.

It does need to be stressed that this is just a small sample and therefore it only suggests a direction, further research needs to be done to confirm whether this suggestion holds true.

Project Management Education

Methodology

The focus of this paper is on commercial offering of project management education where the aim is to learn the student project management. Courses on how to function in projects were discounted as outside the focus.

The search of offerings is confined to the Netherlands. Springest, a publicly available database is used as a source for finding project management courses (www.springest.nl). This database is commonly used by companies as an overview of all possible courses for the staff. This source claims around 300 hits on project management courses, but lists a maximum of 225 depending on the sorting criteria. Courses were retrieved in November and December 2015.

The following criteria were used to sift through the offered courses:

- there is a standard program (as opposed to tailored training or one on one coaching),
- it involves actual teaching/training activities (not just an exam),
- it is aimed at teaching project management (not project work, not software, not project support),
- it is not a combination of other offered courses.

In all 204 courses were selected to be analyzed of which 23 did not meet all four criteria: 2 involved testing only, 4 were aimed at software for project management, 2 were aimed at managers of project managers, 2 aimed at project support and 13 are tailored in one way or another (in-company, coaching or connecting project managers on the same level). The analysis will take place on the 181 courses meeting all criteria.

Analyzing the offered courses was done on the publicly supplied information in the database on several parameters: investment in time and money, target audience, purpose, mode of teaching, course entry level, assessment, subject groups and process groups of ISO addressed and competences addressed. For investment of time, the information given was used. If not given the supplied contact hours were used.

All supplied cost and purpose, but not all supplied enough description to fill in all the parameters. About one in five did not supply any hint about the investment of time, more than a third did not supply any hint about competences addressed. See Table 2 for more details.

Table 2. *Supplied Parameters*

Parameter	Supplied by	In percentage
Investment in time	143	79%
Target audience	148	82%
Subject groups addressed	142	78%
Project phases addressed	122	67%
Competences addressed	112	62%
Course entry level	129	71%

A distinction is made between inexperienced (not started as a project manager yet), junior (just started), medior (some years of experience) and senior (several years of experience). If mentioned a special tag is made for alongside: a project manager that is not purely focused on project management but has project management as a side function of the primary task. Although not all supplied a target audience, the target project manager type (inexperienced, junior, ...) usually could be deduced from the text, by specific wording like 'introducing', 'building on', 'improving', 'working with your own experience'.

The focus of the research is in finding the target project manager type, noting that a vast majority of the courses certainly do not confine their target to only project managers, but often include people in projects, team leaders of people in projects, managers of project managers and sometimes secretaries, accountants, consultants, sponsors etc.

The purpose of the course was split into three options: development in general, learning a specific method like Agile or Scrum, or preparing for general certification like PMP or IPMA. Note that specific method training sometimes also prepares for certification according to the method.

The description of the course is used to mark the ISO subject groups and process groups and competences. Several courses claim that with their training, projects will be more successful, apparently working on risk management without specifically mentioning it. The subject group risk management was marked in those cases. Likewise, claims for better communication led to a check in the communication subject group as did claims for finishing projects on time led to a check in the time subject group. Some courses sum up the

whole index of the PMBOK (PMI, 2008), or the index of ICB3 (IPMA, 2006) therefore scoring high on count of the process and subject groups of ISO. A subject group Value/BC was added, based on previously held focus groups (Nijhuis et al., 2015) receiving markings from courses that mention 'creating value' and/or 'assuring value creation' by the project, or '(guarding the) business case'.

The description of the course is used to mark whether a specific competence is addressed, illustrated by phrases like 'improved negotiation' or '(insight in) negotiation techniques'. Only specific competences could be marked, 'improved communication' could not be marked, since communication is divided into 'listening', 'written communication', 'oral communication' and 'meetings'. A phrase like 'improvement in writing project plans' was marked in written communication and in the process group planning.

Results

On average a project management course costs € 1734,10, ranging from free to € 6,750,--. On average the invested time is 37,4 hours, ranging from forty minutes to 140 hours. The purpose of the training is mostly development (59%) with method based (22%) and non-method based certification (19%) scoring considerably less.

Around half of the courses test the students at the end (51%). The 88 that do not test are 13% of the non-method based certification courses, 15% of the method based courses and 73% of all development courses.

The majority of the courses offered are from private companies, but 28% are offered by higher education institutions - either as separate modules of a complete curriculum or as a specific commercial offer. The higher education institutions are more prone to test the student: 67% performs a test. They also concentrate more on development courses (74%) than on methods (10%) and non-method based certification (16%).

One of the courses is specifically aimed at senior project managers, one targets project managers alongside. Slightly more offers can be found for medior project managers, with six courses. The other 96% targets mostly junior project managers with 51 courses and inexperienced project managers with 122 courses.

A vast majority of 86% is universal in their material, open to and fit for project managers from all contexts.

The primary mode of teaching is still face to face (78%), with online only lagging far behind with 18%. Only 4% (7 courses) put emphasis on a mixed approach. Online is cheaper on average (€ 445), than mixed (€ 706) and face to face (€ 2077). Of the 33 online courses, only 6 supplied a estimated time investment, averaging 17,8 hours. The time investment for mixed courses (based on 6 estimates out of 7 courses) averages 33,3 hours. The time investment for face to face courses averages 38,5 hours (based on 131 estimates of 141 courses).

One course specifies a master entry level, 95 courses (52%) specify a bachelor entry level, 33 courses (18%) specify a vocational entry level. The rest (52 or 29%) does not specify an entry level.

Table 3. ISO Subject Groups with Value/Business Case

Subject group	Certification	Development	Method	Total
Risk	26 (65%)	60 (56%)	5 (15%)	91 (50%)
Cost	30 (75%)	52 (49%)	5 (15%)	87 (48%)
Time	29 (73%)	48 (45%)	10 (29%)	87 (48%)
Communication	26 (65%)	45 (42%)	4 (12%)	75 (41%)
Resource	23 (58%)	44 (41%)	(0%)	67 (37%)
Scope	20 (50%)	36 (34%)	8 (24%)	64 (35%)
Quality	20 (50%)	40 (37%)	3 (9%)	63 (35%)
Stakeholder	15 (38%)	39 (36%)	(0%)	54 (30%)
Value/BC	11 (28%)	12 (11%)	2 (6%)	25 (14%)
Procurement	14 (35%)	3 (3%)	(0%)	17 (9%)
Integration	7 (18%)	2 (2%)	(0%)	9 (5%)

The highest scoring subject groups are risk management (mentioned by half), cost (48%), time (48%) and communication (41%). Lowest are value/business case, mentioned by 25 courses, procurement (17) and integration (9). The method courses are lowest in mentioning subject groups, and time is mentioned mostly by 10 courses or 29% of all method oriented courses. Certification courses are highest, with 30 (75%) mentioning cost, partly because of the aforementioned effect of naming all subjects in the index of the certification requirements. Table 3 lists all results, pivoted against the purpose of the course and sorted on total occurrences.

Looking at the ISO Process Groups mentioned in the course descriptions, development and certification courses are roughly in the same league in percentages that mention them. Planning is mentioned mostly with 62% of all courses mentioning planning (planning a project, making project plans, writing project plans etc.), followed in long distance by controlling and initiating projects (39% and 31%). Implementing and closing are again far behind (18% and 15%). An extra process group, accepting a project as a separate process was mentioned by 4 development courses. All the details can be found in table 4.

Table 4. ISO Process Groups with Accepting a Project

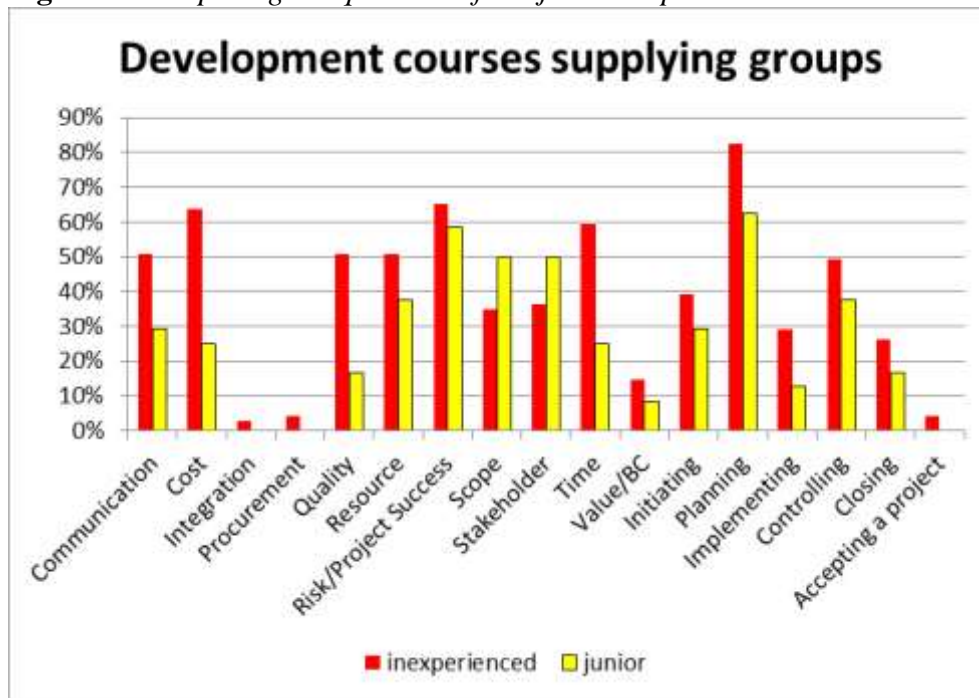
Subject group	Certification	Development	Method	Total
Initiating	16 (40%)	34 (32%)	6 (18%)	56 (31%)
Planning	25 (63%)	73 (68%)	15 (44%)	113 (62%)
Implementing	5 (13%)	23 (21%)	5 (15%)	33 (18%)
Controlling	16 (40%)	45 (42%)	10 (29%)	71 (39%)
Closing	5 (13%)	22 (21%)	1 (3%)	28 (15%)
Accepting	(0%)	4 (4%)	(0%)	4 (2%)

There are 96 development courses, which mention at least one subject or process group. Comparing junior and inexperienced project managers is interesting considering educational focus. Courses for other types of project managers are too scarce to be incorporated in this comparison (2 medior, 1 senior). The graphical comparison of figure 2 shows that percentage wise inexperienced project managers get more attention on all subject groups except stakeholder and scope and on all process groups. On average, the time investment of an inexperienced project managers is also greater (46 hrs) than that of a junior project manager (30 hrs). The same degradation of importance of process groups can be seen, planning becomes relatively even more important, especially for inexperienced project managers. All numbers can be found in Table 5.

Table 5. Groups in Development Courses

		Inexperienced (69 courses)	Junior (24 courses)
Subject groups	Communication	35 (51%)	7 (29%)
	Cost	44 (64%)	6 (25%)
	Integration	2 (3%)	(0%)
	Procurement	3 (4%)	(0%)
	Quality	35 (51%)	4 (17%)
	Resource	35 (51%)	9 (38%)
	Risk/Project Success	45 (65%)	14 (58%)
	Scope	24 (35%)	12 (50%)
	Stakeholder	25 (36%)	12 (50%)
	Time	41 (59%)	6 (25%)
	Value/BC	10 (14%)	2 (8%)
Process groups	Initiating	27 (39%)	7 (29%)
	Planning	57 (83%)	15 (63%)
	Implementing	20 (29%)	3 (13%)
	Controlling	34 (49%)	9 (38%)
	Closing	18 (26%)	4 (17%)
	Accepting a project	3 (4%)	(0%)

Figure 2. Comparing Frequencies of Subject Groups



Competences are scarcely mentioned: 61% of the course descriptions mention at least one of the list of 75 competences: 4 method courses (with an average of 1 competence per course), 28 certification courses (averaging 4,1 competences) and 78 development courses (averaging 4,8 competences). Plotted against time investment and/or money investment, there appears no relation between either of them and the number of competences mentioned.

Only six competences are mentioned more than 20 times: team building (56), conflict resolution (32), natural leadership (31), motivating others intrinsically (31), negotiating (29) and coordinating (27).

The mentioned competences are mostly in the traditional cluster of the taxonomy (short- and long term planning, coordinating, managing risks, etc), all competences mentioned more than 20 times are in this cluster.

Discussion

Reporting on the number of courses does not necessary reflect the number of times a course is given. Some are given several times a year, others once a year.

This research deals with the published texts of commercial offerings of project management courses. There was no check whether claimed processes, competences and/or results were actually incorporated or reached. No doubt marketing departments played a role in the descriptions. This to a large extent explains why most of the descriptions do not provide a clear focused target audience. Designing good course material without a clear focus of the target audience is at least difficult. The point of reference for a project manager (to be) is different than that of a team leader that 'supplies' project team members.

The training needs and goals will differ as will the job and task analysis, making it almost impossible to follow the design steps for curriculum consistency (Kessels, 1993).

Although there is no real consensus whether project management is for an important part context dependent, the vast majority of courses that sell their course to be universal at least raise an eyebrow.

There are only a handful of courses that target the project manager with any experience. For senior project managers this can be expected: their experience will give them specific target areas to develop, instead of a complete overall course. A specific method course, like Agile or Scrum, could be an option, but then an experienced project manager will have to share classes with project managers with hardly or no experience. One could doubt that the learning curve will be the same.

The portion of courses addressing a level below Bachelor (around 18%) is roughly the same as the reported portion of project managers with a level below Bachelor (between 15% and 27%) (Arras People & Thorpe, 2015), but almost a third does not supply a course level. For the courses that do not supply an entry level, one could doubt that the learning curve for all levels would be the same.

Only one course specifically targets alongside project managers. That does not represent the distribution in practice. One would expect alongside project managers to have different learning goals (for instance how to balance project demands with other work demands) and quite possible a different experience, again not satisfying the design steps for curriculum consistency when they opt for a more universal course.

Certification courses score highest in mentioning the subject groups, with seven subject groups (out of ten) being mentioned in half or more. These are meant for project managers that want to be accredited for their project management knowledge or capability, a broad attention span in these courses was to be expected. The almost complete lack of subject groups in the courses that focus on a specific method is hard to explain. Of the process groups, planning is by far the most popular of them all, creating an illusion that project management is mainly planning. The small research in the previous paragraph shows that the top three for inexperienced/junior project managers are scope, team and controlling the project. Planning is at the beginning of a project. Will inexperienced and just started junior project managers be required to make a project plan first before running a project or will they be put on a running project that has been defined by more experienced staff?

It could be considered normal that inexperienced people would get more subjects covered as introduction than junior project managers, especially when there is also more study time. Especially the slightly more attention for stakeholder management for junior seems to partially agree with the small qualitative research done, although that distinction was between junior and senior project managers.

The scarce mentioning of competences in relation to processes somewhat confirms the earlier mentioned inkling that the right competences are hard to

define. The 'often' mentioned competences are in an area that could be expected (from a traditional and a marketing point of view). But these list of six competences do not concur with the top ten of critical skills found in earlier research (Nijhuis et al., 2016), only expectation management and motivating intrinsically are in it, the other four are not. Two others (team building and natural leadership) are in the top ten of frequently mentioned competences in literature (Nijhuis et al., 2016), again four are not.

Conclusions and Further Research

Conclusion

The suggestion to use a process focus for project management education looks viable. Further research is necessary to prove or disprove this position.

The review of commercial offerings of project management courses shows that a process focus in training is also more common than competences - at least when the descriptions are regarded as true to the contents of the courses.

Like in advertising a slight exaggeration of what is sold is to be expected. Although online courses are better equipped to deal with differences in the starting level and learning curve than face to face courses, the majority of the courses is face to face, which is quite logical when focused on application of skills.

Project management requires the application of a diverse set of skills requiring practice. Focusing on process instead of competences (without context) appears logical. There are more occupations requiring a higher education degree for which this reasoning holds true.

The fact that higher education institutions offer commercial project management courses is logical. Several higher education institutions feel the need to prepare students for project management (Crawford, Morris, Thomas, & Winter, 2006; Martin, 2000), which implies that students without or with little project management experience should be educated. Which is what the majority of offerings is actually doing.

Focusing on development courses, the content seems to have a strong bias to planning. A bias that is hard to understand and even less easy to support. To make a comparison outside project management: when designing training for inexperienced firefighters, would the focus be on planning a fire or on hands-on experience fighting fires?

The analysis suggests that curriculum consistency is missing: matching educational focus, material and methods on target audience, training needs, goals and task analysis. Seek and you shall find, but probably not what you were looking for, looks a proper description for most commercial offerings of project management training: a vague target audience, universal for any context, a bias towards planning and only competences from a traditional domain all suggest that the curriculum consistency is not what one could expect from these kind of courses. The claims for better project execution,

fewer delays, less cost overruns and more seem to be mainly marketing instead of based on a consistent curriculum design aimed at reaching these learning goals. The large portion of development courses that does not test the students at the end seems to confirm this statement.

The competences that are somewhat frequently mentioned do not compare to either research on critical competences or earlier research on project management competence. These findings support the earlier critique on project management education.

Generalization and Further Research

This study had been confined to commercial offerings in the Netherlands of project management training. There is no reason to suspect that results in other geographic regions will be different.

A generalization to other types of commercial training looks less obvious, although there are several other, comparable 'less defined', areas in which comparable results can be expected like leadership, coaching, effectiveness, middle management. These kinds of sections look prone to the same lack of curriculum consistency.

Other, better defined sections like nursing and social work in debt relief should be less prone. It would be interesting to research whether either of these suggestions is really true.

Another interesting research is whether the offerings of project management education in higher education curricula differ from the commercial offerings. Is there more curriculum consistency in these courses than in commercial courses?

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