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## Learning Project Management. The case of further education in Norway

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### Abstract

To succeed in the international labor market, the competence of the workforce is crucial. The need to continually update competence has put life-long learning to the top of the political and research agenda internationally, and higher education plays a key role in the effort to manage this challenge.

As working life is changing rapidly, so must businesses and the public sector. In a wide range of organizations and industries, project work is now a common practice and a main catalyst for change. Hence, competence in project management is highly wanted, and has resulted in many courses offered by higher educational institutions.

This paper examines the spreading of further education courses on project management and project work offered by public higher educational institutions in Norway. The focus is on which professional fields dominate the teaching of project management and what forms of learning they apply. The study maps the extent to which student active learning is implemented in the course design by looking at which methods of assessment are utilized.

The findings show that the professional fields of business administration as well as engineering and technology dominate teaching in project management and project work. There are also indications of widespread use of student active learning in courses of project management, although it is not consistent and how it is implemented in practice needs further investigation.

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## 1. Introduction

The skills and competence of the workforce are among the most important factors of success in the international labor market [1]. Especially since the year 2000, this acknowledgment has come to the forefront of the political agenda in countries all over the world, including Norway [2-5]. However, learning is a continuous and lifelong process, skills and abilities need to be updated, and it is becoming ever more clear that adult learning have many benefits for both the individual, the businesses and for society as a whole [6, 7].

Norway is a high cost country, and dependent on having a highly skilled workforce in order to be competitive internationally [5]. Over 60 % of Norwegian employees claim to have learning intensive work, and 7-10 % of Norwegians aged between 22 and 59 participated in further education between 2003 and 2010 [5, 7]. However, government authorities in Norway still believe there is a need for a closer interaction between working life and the institutions of higher education in order to make sure that the offers of further education are relevant and fits the demands of working life [5, 8].

Project work is becoming a common work method on a regular basis in a widespread range of industries and organizations [9]. In addition, the rate of change is increasing, and many initiatives for change are organized as projects. At the same time, the success rate of projects is still low and project management (PM) skills are reported to grow in importance [10]. These trends indicate the need to learn more about project work in general and PM in particular. Higher educational institutions play a key role in addressing this need.

Similarly, the need to increase quality of learning in higher education is high on the political agenda, and engaging students more actively in the learning process has become the desired pedagogical approach to achieve better student learning. However, only a few studies have been done to investigate how these approaches are enacted in practice [8]. This issue should therefore be investigated more thoroughly in order to increase our knowledge of quality in higher education, including the field of PM.

The main purpose of this paper is twofold; firstly, to examine the spread of further education courses related to project work and PM and what professional fields dominate them, and, secondly, to map the extent to which student active learning is implemented in the course designs of further education courses in the field of PM. The investigation is limited to public higher educational institutions in Norway.

## 2. Theoretical background

It is important to know how different pedagogical approaches contribute to student learning [8]. Higher education have been slower than other parts of the educational system to adopt new and more student active forms of learning [11]. After a long period of *academic drift* [12] in higher education, educational institutions and policy makers in Norway are debating the *practice-theory balance* and *practice in learning* [13, 14]. Scientific-technical rationalities that regard knowledge as something that can simply be transmitted from scholar to novice, have been challenged by new perspectives on learning emphasizing learning as a social, collective, situated and ongoing process of change [14]. As we move from the goal of pure knowledge *acquisition* based on lectures and teacher-led activities, to the goal of knowledge *construction* and *creation*, student active learning methods and student-centered approaches are considered to be better suited in order to achieve a higher quality of learning [8, 11]. However, earlier studies have shown that these approaches are not generic, but should be seen more as pedagogic principles that have to be adapted to each specific academic context [8], such as the field of PM. How these newer ideas of pedagogy have found their way into the teaching of PM is still relatively unknown.

Student-centered approaches are characterized by including the students actively in the learning process by involving them in knowledge construction and exploration [8]. There are many different methods of doing this, such as case-based learning, problem-based learning and project-based learning (PjBL). PjBL is used in a variety of different academic contexts, but seems even more relevant when learning PM. Applying this learning approach involves doing a project while learning about project work, and seems to fit well with the notion of “doing knowledge” [14], directly linking the field of learning to the methods of learning.

In PjBL, students are usually engaged in solving real-life problems and gathering the relevant data themselves. The problem is not defined by the teacher, but by the students [14]. When involved in knowledge construction, the students have to actively engage themselves in the process of problem framing, exploration and solving. This process entails

utilizing the students' own prior knowledge and understanding [8]. At the same time, project work provides students with the opportunity to learn “both domain knowledge and practices, but also generic skills, such as collaboration” [8, p 39]. Thus, PjBL also seems to provide a suitable response to the critique against PM education as lacking the needed emphasis on soft skills [15].

Earlier research on PjBL has documented many positive results on student learning. These include, among others, interdisciplinary learning in authentic contexts and increased student motivation. These positive effects are provided that the teaching makes room for original contributions and are not constrained by pre-determined procedural limitations [8].

According to Svinicki and Schallert [11], theories of adult learning have for some time advocated that adult students have prior knowledge that make them particularly suited for more active learning situations. Earlier research has shown that *prior knowledge activation* has good effect on learning and contributes to active learning strategies and integration of prior and new knowledge [8, 16], and that student-centered approaches to learning is even more beneficial for students with a high level of prior knowledge [8]. Thus, the pedagogic principle of connecting to the student's prior knowledge and experience in the field, should be applied when dealing with further education and adult learning.

Projects share some main defining characteristics, such as; working towards an established objective, a timeline with a defined beginning and end, involving different professionals across company borders, and doing something that has not been done before at specific time, cost, and performance requirements [17]. Project work is today one of the main forms of practice in many different fields of work [9], and utilizing PjBL in courses related to the field of PM and project work, should provide the students with a suitable arena to increase both their domain-specific knowledge on project work and PM, and their collaborative project skills.

### 3. Research methodology

Further education includes all public education resulting in formal competence that is not part of a first time education [7]. The investigation presented in this paper is limited to PM courses offered as further education courses by public higher educational institutions in Norway. Additionally, the investigation is limited to courses offered as part time studies and focuses on teaching and learning practices at the course level. The main purpose is to examine the spreading of such courses, to identify which professional fields dominate the teaching of PM, and what forms of learning they apply.

To get an overview of earlier research, a literature search was conducted according to the description of Arksey and O'Malley [18], and the results form the basis for the theoretical background presented earlier. The research presented in this paper is based on information gathered from an online search of all 21 public higher educational institutions in Norway. Limiting the investigation to public institutions, entails that information from private institutions have not been gathered at this stage. This should be done in a later project to complete the findings presented in this paper.

Among the 21 studied higher educational institutions, 11 offer further education courses related to project work and PM, and the investigation found a total of 34 different courses. The courses were categorized by which professional field they belonged to. This was decided based on what professional background the students are required to have in order to be admitted into the course, what department of the educational institution offered the course, and the professional background of the main teachers.

Learning outcomes were collected from all the courses identified, and subjected to content analysis [19] to identify indicators of student active learning in the teaching of PM. Content analysis is a method that allows the combined use of qualitative and quantitative approaches to the data, and minimize the risk of the data being influenced by the data collection in itself [20].

The learning outcomes represent the official representation of which teaching methods are applied in the different PM courses, and represent their course design. Learning outcomes of PM courses were retrieved from the websites of the institutions investigated. To identify the main teaching methods in play, the data gathering has been focused on the assessment criteria, as these are powerful course elements essential to influence student behavior and learning [8], and reflect the pedagogical approaches applied in the course. There are some limitations to this approach, as student active learning is not alone dependent on assessment criteria. However, it is a suitable place to start to get a first overview, in accordance with the purpose of this study. Data on the number of credit points of each course was also

collected, in order to see if this, and/or the professional field of the PM course, could explain any variation in the teaching methods utilized.

#### 4. Findings and discussion

The findings show that the professional fields of engineering/technology and business administration dominate the teaching of PM. This seems surprisingly limited given the fact that project work is such a widespread method all across working life, but could also imply that skills in project work and PM are viewed as generic and applicable across different contexts.

Looking at courses in PM offered in the field of engineering and technology, their target group is mainly limited to students with professional engineering or technological background, thus excluding students from other professional fields. This could imply that project skills are not considered generic within the field of engineering and technology, but as something more specific in this professional context. The 14 courses found are listed in table 1.

Table 1. Overview of further education courses in PM based on educational programs in engineering and technology

Institution	Course title	Credit points	Method of assessment	Student active learning
NMBU	Leadership in Projects	5	Home assignment	Yes
NMBU	Project Management in Practice	5	Home assignment	Yes
NTNU	Project Engineering Management	7,5	Project assignment	Yes
NTNU	Risk Management in Projects	7,5	Home assignments and home exam	Both
NTNU	Strategic Project Management	7,5	Home exam	No
NTNU	Management and Ownership in Projects	7,5	Folder evaluation	Yes
NTNU	Practical Project Management	7,5	Home exam	No
NTNU	Agile Practice in Projects and Digital Transformation	7,5	Group assignment and individual project assignment	Yes
NTNU	From Need to Project	7,5	Project assignment	Yes
NTNU	Project Implementation Model According to ISO 19650	7,5	Case group assignment and individual home assignment	Yes
NTNU	Project Engineering of Bridges	7,5	Project assignment	Yes
USN	Project Management of Complex Systems	7,5	Home assignment	Yes
USN	Project Management of Complex Systems (master level)	7,5	Home assignment	Yes
UiT	Construction Administration and Project Management	10	School exam	No

As the table shows, the methods of assessment vary somewhat. 11 courses apply some sort of home assignment, project assignment or folder evaluation, indicating a course design based, at least partly, on a student active approach. However, it is unclear to what degree the assignments involve real-life problems and data gathering, and to what extent the problem framing, exploration and solving are defined and developed by the students or the teacher. Thus, to decide whether these kinds of assignments are in accordance with a student active approach, a closer examination than what is possible within the limits of this investigation is required. Only three courses depended solely on home or school

exams as their method of assessment, indicating that student active learning is not the main learning approach in these courses. There is no indication that the number of credit points has any influence on the preferred assignment method.

Looking at courses in PM offered in the field of business administration, their target group is fairly unlimited, welcoming students of all professional backgrounds. This seems to fit well with the notion that most projects include participants from a diversity of professional fields in accordance with the definition of project work by Larson and Gray [17]. It also implies that within this professional field, the skills and knowledge necessary in PM are considered to be generic rather than context specific. The 18 courses found, are listed in table 2.

Table 2. Overview of further education courses in PM based on educational programs in business administration

Institution	Course title	Credit points	Method of assessment	Student active learning
NTNU	Management and Organization of Project Work	7,5	Report and home exam	Both
OsloMET	Project Management 1	10	Individual (or group) project assignment	Yes
OsloMET	Project Management 2	10	Group (or individual) semester assignment	Yes
UiA	Organization and Management of Projects	10	Individual home exam	No
UiA	Project Management	7,5	Individual or group project assignment	Yes
UiS	Project Management	10	Group project assignments	Yes
USN	Project Management	15	Group project assignment	Yes
USN	Project Management (online)	15	Individual home exam	No
UiT	Project Management	15	Individual home exam	No
UiT	Managing Projects	15	Individual oral exam	No
UiT	Practical Project	15	Group project assignment	Yes
UiT	Project Management (online)	10	Individual home exam	No
UiT	Project Assignment in Project Management	10	Group project assignment	Yes
UiT	Managing Projects	10	School exam	No
INN	Project Management	7,5	Individual home exam	No
INN	Project Management in Dalane	7,5	Individual home exam	No
HVO	Process Management and Project Design	15	Individual home assignment	Yes
HVL	Project Management	15	Group project assignment and individual home exam	Both

As the table shows, the methods of assessment also vary somewhat within the field of business administration. 10 courses had some sort of report, semester assignment, home assignment or project assignment, indicating a student active approach. However, as in the engineering/technology PM courses, the degree of student or teacher driven activities cannot be decided based on this information alone. Eight courses depended solely on home or school exams as their method of assessment, indicating that student active learning is not the main learning approach. There is still no indication that the number of credit points has any influence on the preferred assignment method. However, it is interesting to notice that the student active approaches seem to be more dominant in PM courses in the field of engineering and technology than in the field of business administration.

A couple of courses in PM were also found in other professional fields than that of engineering/technology and business administration. One is offered by UiT the Arctic University of Norway (UiT) and aimed at teachers, and one is aimed at professionals in the field of culture and is offered by the Norwegian Academy of Music (NMH). This seems to fit well with the notion of project work being used in all kinds of industries [9], and both in the public and private sectors. The two courses found are listed in table 3.

Table 3. Overview of further education courses in PM based on other educational programs

Institution	Course title	Credit points	Method of assessment	Student active learning
UiT	Innovation, Development Work and Project Management in Special Education Work	10	Individual written assignment	Yes
NMH	Cultural Entrepreneurship – Self-management, Communication and Project Work	15	Individual project assignment	Yes

In both courses, the methods of assignment seem to fit with a student active approach. In the case of the course for teachers, the assessment method is an individual written assignment, while in the case of the cultural workers the students have to do an individual project assignment. However, as is the case with PM courses in the field of engineering/technology and business administration, the degree of student or teacher driven activities needs further investigation into how these assignment methods are implemented.

Another factor interesting to look at, is whether the assignment methods are individual or group based. Group based assignments fits better with the goal of engaging students in developing PM soft skills, such as collaboration skills [8, 15]. In the learning outcomes of some of the courses, this aspect is not specified. However, there seems to be a significant number of courses in PM relying on individual assessment methods, and even some of the project assignments can be done individually. How this effects student learning in the field of PM is an interesting topic for further investigation.

This study has shown that the vast majority of PM further education courses in Norway are based in the fields of business administration or engineering and technology. Although PM courses aimed at teachers and cultural workers were also found, it is surprising that further education courses in such an interdisciplinary field as PM is based on such seemingly narrow professional profiles. As PM expertise and skills are utilized in a variety of other professional areas [9, 21], higher educational institutions in Norway should notice this finding and address the need to embed PM in other fields as well. Broadening the professional horizon of PM courses could perhaps also contribute to make further education in PM more relevant for other fields of working life, and increase the rates of project success.

The study has also shown that while a majority of the courses had a course design indicating a student active approach, in line with the current pedagogical recommendations, there was also a significant number of PM courses (especially in the field of business administration) that seemed to base their assessment methods on the traditional ways of thinking of knowledge as something the students must *acquire* based on teacher-led activities. Hence, these courses do not appear to base their course design on the concept of knowledge *construction* and *creation*. This is somewhat surprising, considering that the field of PM seems to fit particularly well for student active approaches, and especially when dealing with further education and adult students with high levels of prior knowledge.

In addition, even though the majority of courses have indications of student active learning and a student-centered approach, the degree to which and how such approaches are implemented in practice is still unknown and needs further investigation. Earlier studies have shown that there is a difference between what is planned in the course design and what happens when the course design is implemented [8]. Thus, further investigations are needed to conclude on how student active approaches are practiced and what effect on learning these approaches have for students within the field of PM.

## 5. Conclusions and suggestions

Increased understanding of both how to anchor the teaching of PM in the different professional contexts in which project work is applied, and which pedagogical approaches have the best effect on student learning in the field of PM can be crucial for improving the success rate of projects in the future and making this field of higher education more relevant for working life. The findings presented in this paper, show that the professional fields of business administration as well as engineering and technology dominate teaching in PM and project work in public further education in Norway. However, project work is a common work method in many other professional fields, and this raises the question whether there is a need for higher educational institutions to anchor the teaching of PM more broadly in order to ensure that more attention can be paid to the specific and different contexts of PM. This calls for further investigation. It would also be interesting to do a comparison with other countries to see if the professional fields on which PM education is based and the pedagogical approaches to PM, differ internationally.

In addition, the findings indicate widespread use of student active learning in courses on PM, although it is not consistent and how it is implemented in practice is still relatively unknown. A limitation to this study is connected to the simplistic categorization of assessment criteria. In order to decide whether and how a student active approach is implemented in the courses, more information on the content of assignments and the teaching methods applied in the different PM courses is needed. Further research should therefore build on the findings presented above, and supplement this study with in depth case studies that can provide a deeper understanding of the issues addressed in this paper. Investigating both teachers' and students' experiences from further education courses in order to find out how different pedagogical approaches enhance student learning in the field of PM should be included in such further examination. How individual versus group assignment methods support student active learning in PM also requires more attention.

Another limitation of this study is the exclusion of PM further education courses offered by private higher educational institutions in Norway. Both the BI Norwegian Business School – which has a prominent PM research group – and other private institutions, offer different further education courses in PM. Thus, the courses offered by private educational institutions, should also be included in the next steps of research in order to get a fuller picture of the field of further education in PM in Norway.

## References

- [1] Bolman LG, Deal TE. (2017). *Reframing Organizations: Artistry, Choice, and Leadership*. Hoboken, New Jersey: John Wiley & Sons, Inc..
- [2] OECD. (2014) *OECD Skills Strategy Diagnostic Report: Norway. Better Policies for Better Lives*. OECD.
- [3] OECD. (2020) *Education at a Glance 2020: OECD Indicators*. Paris, OECD.
- [4] OECD. (2020) *Strengthening the Governance of Skills Systems: Lessons from Six OECD Countries. OECD Skills Studies*. Paris, OECD.
- [5] Kunnskapsdepartementet (2019-2020). *Kompetansereformen - Lære hele livet*. Oslo: Kunnskapsdepartementet.
- [6] Ruhose J, Thomsen SL, Weilage I. (2019): "The benefits of adult learning: Work-related training, social capital and earnings." *Economics of Education Review*. 72:166-86.
- [7] Wiborg Ø, Sanven T, Skule S. (2011) *Livslang læring i norsk arbeidsliv 2003-2010. Trender og resultater fra Lærevilkårsmonitoren*. Oslo, Nordic Institute for Studies in Innovation, Research and Education (NIFU).
- [8] Nerland M, Prøitz TS. (2018) *Pathways to quality in higher education*. Oslo, Nordic Institute for Studies in Innovation, Research and Education (NIFU).
- [9] San Cristóbal JR, Diaz E, Carral L, Fraguera JA, Iglesias G. (2019) "Complexity and Project Management: Challenges, Opportunities, and Future Research." *Complexity* 6979721.
- [10] KPMG, AIMP, IPMA. (2019) *The Future of Project Management: Global Outlook 2019. Project Management Survey*. KPMG, AIMP and IPMA
- [11] Svinicki MD, Schallert DL. (2016) "Learning Through Group Work in the College Classroom: Evaluating the Evidence from an Instructional Goal Perspective." in Paulsen MB (ed) *Higher Education: Handbook of Theory and Research*. Switzerland: Springer International Publishing; p. 513-58.

- [12] Pratt J, Burgess T. (1974) *Polytechnics: a report*. London: Pitman.
- [13] Crawley EF, Malmqvist J, Östlund S, Brodeur DR, Edström K. (2014) *Rethinking Engineering Education: The CDIO Approach*. Heidelberg: Springer.
- [14] Hager P, Lee A, Reich A. (2012) "Problematising Practice, Reconceptualising Learning and Imagining Change." in Hager P, Lee A, Reich A (eds) *Practice, Learning and Change: Practice-Theory Perspectives on Professional Learning*. 1 ed: Springer Netherlands; p. 1-14.
- [15] Ewin N, Luck J, Chugh R, Jarvis J. (2017) "Rethinking Project Management Education: A Humanistic Approach based on Design Thinking." *Procedia Computer Science* **121**: 503-10.
- [16] Wetzels SAJ, Kester L, Van Merriënboer JJG. (2011) "Adapting prior knowledge activation: Mobilisation, perspective taking, and learners' prior knowledge." *Computers in Human Behavior*. **27**:16-21.
- [17] Larson EW, Gray CF. (2011) *Project Management. The Managerial Process*. New York: Mc-Graw-Hill Irwin.
- [18] Arksey H, O'Malley L. (2007) "Scoping studies: towards a methodological framework." *International Journal of Social Research Methodology*. **8**:19-32.
- [19] Schreier M. (2013) "Qualitative Content Analysis." in Flick U (ed) *The SAGE Handbook of Qualitative Data Analysis*: SAGE Publications; p. 170-83.
- [20] Weber R. (2011) *Basic Content Analysis*: SAGE Publications.
- [21] Payne JM, France KE, Henley N, D'Antoine HA, Bartu AE, Elliott EJ, et al. (2011) "Researchers' experience with project management in health and medical research: Results from a post-project review." *BMC Public Health*. **11**:1-11.