International Conference

Conference PROCEEDINGS

⬛ THEME ⬛
ENHANCING QUALITY EDUCATION THROUGH INNOVATIVE PEDAGOGY

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION (SSTE)

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

6th INTERNATIONAL CONFERENCE OF SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION (SSTE)

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DATE 1ST – 5TH OCTOBER, 2018

FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA

6th INTERNATIONAL CONFERENCE OF SCHOOL OF SCIENCE AND TECHNOLOGY EDUCATION (SSTE)

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ENHANCING PROJECT MANAGEMENT TRAINING THROUGH MENTORSHIP

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Abstract
Project Management profession is relatively new in many developing countries including Nigeria. There is often a misconception of the duties of a project manager vis-a- vis other older and more traditional professions in the built environment and engineering field. There also exists significant gap between the offerings of current curriculum in use for project management in the educational institutions and the skill set required by industry. This research therefore evaluates the impact of mentorship on training in the project management discipline. A mixed research methodology was used to determine those key criteria that enable or inhibit student performance for proper placement and integration into the labour market. The study evaluated student's adaptation to critical thinking skills and soft skills which are both essential for dealing with project complexities. The study used students' academic performance as measure for their levels of comprehension, assimilation of project management tools and techniques. Result achieved can be used to reduce attrition level and increase satisfaction among student and other key stakeholders.

Introduction
The study of Project management as a discipline is relatively new in the University system when compared to other development-based fields. Thus, the impact of mentorship in determining the quality of the professional training is significant. The development of future talents in project management would require tools like mentorship to bridge the gap in knowledge and inspire students for career development in the field.

The pedagogy concept of mentorship training is responsible for assuring a high level of penetration that would stimulate and incorporate standards (Porumb, 2015). The program aims at improving growth of students' education enrolment through the development of a mentee assistance system that is coherent, cohesive and sustainable (Hudson, 2013). The resultant growth is expected to improve the academic performance of project management students in tertiary institutions.

Historically in Universities, the project management profession was introduced about half a century ago and this was mainly in the engineering curricula. Arising from developments over time in computer systems especially in the 1950s, together with operational research and systems engineering management, earlier focus on project management education was on scheduling and optimization techniques to prepare students for working in multi-project environments (Bergmana, 2014). Subsequently, Project Management survived through certain professional certifications schemes by the Project Management Institute (PMI) founded in 1969 (Schwalbe, 2007).

In Nigeria, the field of project management has barely penetrated any of the 167 Universities. Till date, only a handful of the Universities are offering project management at either

undergraduate or post graduate level (National University Commission, 2018). This slow integration into the university broad training curriculum emphasize the need for mentorship programs to encourage the growth of the profession. Consequently, it makes it difficult to find qualified labour that can properly train according to international standards and develop the project management profession successfully (Saidoun, 2016)

Globally; project management is common in many industries in different ways, from large infrastructure projects, to small-scale projects. Nowadays, more institutions are regarding project management as being mandatory for their survival and all the organizations that were opponents to project management are now advocates. Today there is improved awareness of the importance of project management, not as singular and isolated undertaking, but rather as a means of structuring and simplifying complex tasks in a larger organizational setting (Bergmana, 2014). Lack of project management training often leads to irrational decisions based of intuition, emotion and even improvisation with no mastery of the objective (Saidoun, 2016).

Observably, mentorship application has lagged behind in most conceptualized fields, but is apparently absent or at best immature in Project Management. Therefore, the aim of this study is to investigate the perceived value of formal mentorship by conducting a survey on students of project management discipline in Minna, Niger state. There is therefore, a critical need to understand how educators can help and guide prospective mentees in establishing a strong link between practical and coursework to bridge the current gap existing.

Project Management Curriculum

The objective for the course is to achieve that, when completing, the student can be able to: formulate and evaluate projects, run processes, have knowledge of Project Management competences, and to perform managerial roles in identifying real market needs (Guerreroa, Palmaa, & La Rosaa, 2014). Project Management study curriculum of the Nigerian University Commission (NUC) is a 5-year program comprising 9 semesters of course and six months of industrial attachment. The last semester consists of the preparation and defense of a project under the guidance of supervisor who serves as a mentor. Some of the required courses are: Project Planning and Control, Research Methods, Operation Research, Projects Risk Management, Human Resources Management, Operation Management, Entrepreneurship, Contract Management, Computer for Project Managers, Quality Control, Materials Management, Marketing Professional Practice.

The Role of Mentorship in Project Management

In the study of Project Management, people are the most important asset and determine the success or failure of the project. An increasing number of young people are experiencing psychological, social and behavioral difficulties in their transition to adulthood which is problematic to development in society (Busse, Kipping, & Campbell, 2018). According to Hudson, Hudson, Gray, & Blaxham (2013) an experienced mentor should consider enhanced teaching and learning as a way to engage in professional dialogue which is necessary for education reforms.

Mentorship can be explained as a means to guide and instruct a mentee to grow and develop. Its benefits include the facilitation of socio-emotional, cognitive and identity development. It

further involves willingly sharing knowledge and resources to enhance teaching and training for positive mentor-mentee relationship(Hudson, Hudson, Gray, & Blaxham, 2013).

This agreement between two people whose share their experience, expertise and thoughts are put in order to promote personal and professional development to actively make use of a Mentor. The act of mentoring and being mentored can be hard as it involves people. Secondly, it requires compromises between two people with partially divergent interests in the context of a hierarchical relationship (Marini Abu Bakar, et al., 2013)

A one-sided benefit is a failure; a two-sided benefit is the goal of successful mentorship program. Whenever different personalities are involved, sharing and promoting positive experiences can be mutually benefitting to development.

Literature Review

Numerous studies reveal that students' poor performance in tertiary education are largely traceable to poor academic background with a range of other indicators contributing (Bradbury, 2010)(Hudson, Hudson, Gray, & Blaxham, 2013) (Porumb, 2015)Other identified factors include gender and age of student, fathers and mother occupation and educational level, the family income and size and the prior academic history in secondary School(Goga, Kuyoro, & Goga, 2014).The factors are not exhaustive and would require further research to consider other tools to improve students' performance, like Mentorship. There is also a need for a collaborative effort by teachers, parents/guardians, higher education administrators and students alike, to achieve the required level encouragement and motivation; and this, should be closely monitored within a structured system of mentoring.

To transform college education beyond the traditional education boundaries, a student-centered learning that focuses on educational practices and principles would provide students reasonable access to the knowledge and skills necessary for college and career readiness(Bradbury, 2010). Class exercises and drills alone do not contribute much to students 'competencies. Instead, specific tasks such as report writing, conduct interview, system development, research and analysis can enhance. student competencies that surpass the knowledge and skills typically measured in achievement tests. These competencies include problem solving, analyzing, critical thinking, creativity, collaboration, data management and communication (Abubakar, et al., 2013)

According to Schwale (2007) understanding what motivates people and what ultimately enhance their performances include intrinsic and extrinsic motivation. However, mentorship which uses motivation as a tool can be considered as a means to influence the effectiveness of project management study in the university. For example, a student could have at least one academic supervisor, and one industrial mentor.(Sundströma, Widforssab, Rosqvistab, & Hallina, 2016).

The concept of mentoring can be described as a networking opportunity that provides advice, offer support and holds mentee accountable. It is a balance between good communication and strategic actions(Heikkienen, Wilkinson, Aspfors, & Bristol, 2018). Therefore, educators need to be more deliberate about the different aims, goals and values of mentoring which includes both formal and informal approach to mentoring. Figure 1 below illustrates the basic framework ofthis operation. However, research also indicates existence of gap in knowledge concerning

roles of top management and project management strategic application in organizations (Hyvari, 2015)

Several types of mentoring exist., namely -explicit modelling, constructive feedback, facilitate and nurture; critically self-reflect (Hudsona, Hudsona, Grayb, & Bloxh, 2013). Kang, Ran Yoo, & Park (2012) describes the process of mentoring as -Preparing, Matching, being a Mentor and Ending a relationship.

Traditional approach to mentoring provides students with emotional support, stress reduction and support in the development of novice instructional knowledge and skills(Monkevicene & Autukeviciene, 2015). Traditionally, mentorship is conceived as a long-term, face-to-face, bilateral relationship between an inexperienced student and an adult consultant in which the mentee's occupational, academic or personal development is encouraged(Erginer, 2009).

This educative mentoring style is oriented towards surviving and solving everyday problems. As a result, enables maturity of personality, professional development and career prospects.
Another type of mentorship is reformed based, by fostering change when students from universities and other educational institutions bring new theoretical approaches to mentors, and by so doing, mentors not only teach the students but also learn from them. Hence both learn together and enable change in teaching practice(Bradbury, 2010).

More recently, On-line mentoring has drawn attention from academia and industry due to its potential to nurture more effective communication between mentors and protégés. It has been an important task for mentoring managers to facilitate and support the activities of participants in online mentoring (Kang, Ran Yoo, & Park, 2012). These approaches encourage a robust structural format with enhanced system of feedbacks.

The figure 1 below illustrates personal development mentorship, academic and employability mentorship now considered as a professionally accepted means of personal development.
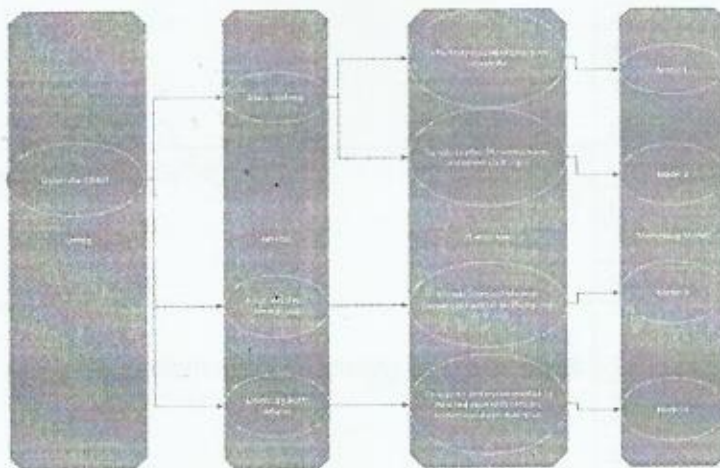

Figure 1: An adapted typology of formal mentoring programmes for a model in the Unit Kingdom(Heide, Campbell, & Kipping, 2018)

Methodology of study

The research was conducted by means of structured questionnaires administered to a study population of 239 scholars and graduates of project management of the Federal University of Technology, Minna; comprising undergraduate students of 400 level, 500 level, postgraduate students, and other graduates of the department. Their general experiences in the discipline would include industrial attachment and student industrial work experience usually organized internally.

Out of the 279 questionnaires issued to the above study population, a total of 179 returned completed questionnaires, thus, constituting 70% response rate. This is considered reasonable and adequate for a study of this magnitude, more so, considering the relative youthfulness of the department, having had its first grandaunts by 2015.

Subsequently, data obtained from survey results received were analyzed. The analysis was based on certain variables related to project management education with an aim of their categorization and formulation of learning outcomes for programme enhancement.

Result and Discussion

Table 1 below shows the distribution of respondents according to the gender, age, level of education and grade point performance. From the response obtained, 86%were male, reflective of admission disparity in the programme. Subsequently, 49% responded came from a graduate student from the department, while the general performance indicated that 52.2% of the respondents were student or graduate in second class lower level (2.5-3.4).

Table 1: Distribution of Respondents

Gender	Male	86%
	Female	14%
Age	below 25	25.8%
	25-30	52.5%
	30-35	11.7%
	35-40	3.3%
	above 40	6.7%
Level of Education	undergraduate(400&500L)	30.8%
	Graduate (B.Tech.)	45%
	PGD	5.8%
	Masters	17.5%
Academicperformance according to grade point	1.0-1.5	Nil
	1.5-2.4	20.9%
	2.5-3.4	52.2%
	3.5-4.4	22.4%
	4.5-5.0	4.5%

Source: Field Survey (June, 2018)

Subsequently, in figure 2 below the ratio of respondents indicated that choice of mentor is largely shared amongst University Staff (29.2%), Older students (11.7%) and Adult Volunteers (21.7%). However, about 21.7% of the respondents indicated lack of a mentor. A key factor that influences choice of an academic adviser or adult volunteer is someone with relevant academic and/ or professional standing which they could further use as a reference in their curriculum vitae. This incentive encourages the student to keep good relationship with someone that meets the requirement.(Bradbury, 2010)
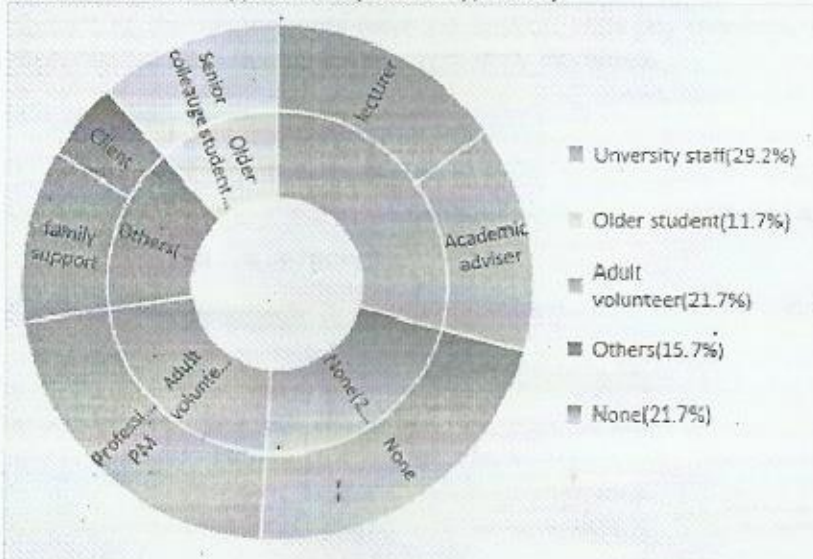
Figure 2: Source of Students' Project Management Mentorship
Source: Field Survey (June, 2018)

From Table 2, almost all respondents acknowledged their interest in the project management study. The concept of mentorship is largely vague to a lot of students and many view the role of a mentor more as informal and may unlikely disregard the advantages of any perceived benefits. From the table2 below shows that Project management as a discipline is generally appreciated by students studying it, with very few regrets. This positive view of Project Management encourages the implementation of mentorship programme, however the lack of it discourages over 44.8% of respondents from the programme. Furthermore, that survey revealed that 66.7% of the respondents have some form of mentorship and same percentage acknowledge that they are encouraged and motivated by their Mentors as shown in the table 2 below.

Table 2: Responses to Application of Mentorship in Project Management Study

Question	Yes(%)	No(%)
Interest in Project Management study	97.1	2.9
Regrets Project Management study	2.9	97.1
Existence of Mentorship encourages interest in the course·	95.2	4.8
Lack of Mentorship does not affect interest in the course	55.2	44.8
Mentorship is available from Adult Volunteer/Older Student/University	66.7	33.3

Staff		
Receive Motivation and Encouragement from Mentor	67.6	32.4

Source: Field Survey (June, 2018)

However, having a mentor and interacting with them are two different things. Figure 3 below illustrates the frequency of mentorship meetings in an academic year. As indicated the number of meetings between mentee and mentor is often as the need arises (48.4%). However, 30 percent of the respondents have no session with any mentors. And based on the numbers of meetings for staff decreases the frequency increases.
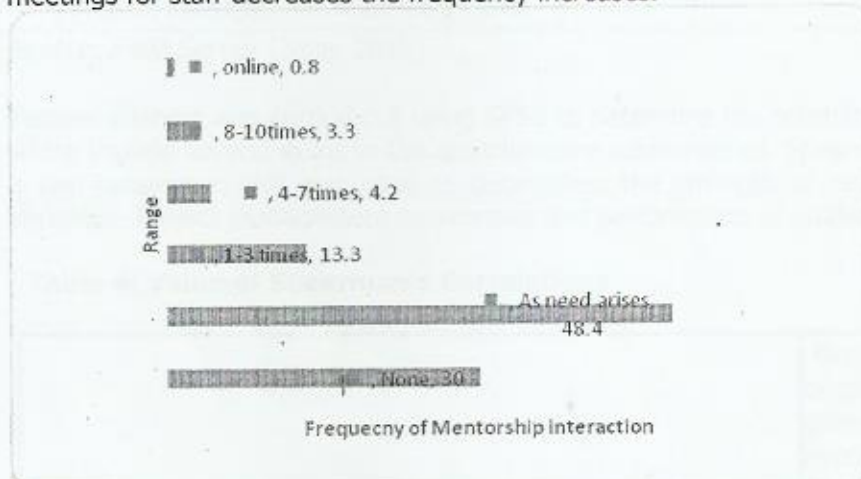
Figure 3: Frequency of Mentorship Meeting with students. Source: Field Survey (June, 2018)

Project Management discipline play a key role in ensuring the maturity of the profession through the development of knowledge area skills, tools and techniques to achieve success. This would allow students develop competences in accordance to the demands of the industry in which they will perform functions typical of their career. Five key project management core skills and competences were evaluated and responses sought from the respondents as shown in table 3 below. The variables were to establish whether mentorship enabled the development of Project Management study amongst students. Results as shown in table 3 below indicates that majority of respondents agreed that they were satisfied with the level of professional mentorship received and that mentorship enabled development of their project management skills. However, only 21 % and 4.4% respectively had a negative view of the impact of mentorship on their project management skill development. They considered the impact as not very significant.

Table 3: Survey Assessment of Mentorship Application for Project Management students

	As a student of this University I am …	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Q1	Satisfied with the Level of Professional Mentorship	11.4	9.6	26.3	26.3	26.3
Q2	Satisfied with my Experience as a Project Management Student	1.8	2.6	33.3	36.0	26.3

Q3	Satisfied with the Soft skill in human relationship and leadership roles	0.0	1.8	25.4	48.2	24.6
Q4	Satisfied with my ability to analyses complex data	0.9	7.9	32.5	40.4	18.4
Q5	Satisfied with my understanding Project Management tool and Techniques	0.9	6.1	27.2	41.2	24.6
Q6	Satisfied with my ability to Understand Project Management Knowledge Area	2.6	2.6	22.8	40.4	31.6

Source: Field Survey (June, 2018)

Further analysis was carried out using SPSS to determine the reliability of the scalable variables which include several items in the questionnaire administered. SpearmanCorrelation Coefficient, a non-parametric test was used to determines the strength of relationshipbetween the two variables- Project management mentorship and performance of students.

Table 4: Value of Spearman's Correlations

			Graduating or present grade point average(CPGA)	ind1mean
Spearman's rho	Graduating or present grade point average(CPGA)	Correlation Coefficient	1.000	.240**
		Sig. (2-tailed)	.	.001
		N	179	179
	ind1mean	Correlation Coefficient	.240**	1.000
		Sig. (2-tailed)	.001	.
		N	179	179

**. Correlation is significant at the 0.01 level (2-tailed).

Cronbach's alpha was used to measure internal consistency for multiple Likert questions in a survey. From Appendix 1 above has the value at 0.839 which indicates a high level of internal consistency. From the analysis, any scale varies the Cronbach's Alpha from .858 to .782 in each instance.

In continuation, the correlation between the students' performance measured using the cumulative grade point average and Project Management mentorship.

Hypothesis:
H_0: there is no significant positive relationship between student performance and the Level of Professional Mentorship
H_1: there is a significant positive relationship between student performance and the Level of Professional Mentorship

Table 4 above indicates that the Spearman coefficient is 0.248 thus indicating significant relationship at 0.01 level (2-tailed test) and suggests the existence of a positive linear relationship between Student performance and the level of professional mentorship.

Conclusion and Recommendations

This research would enable the designing a framework that could serve as a means for ensuring better performance of students through recommended strategic adjustment. These adjustments would include curriculum review that aims at increasing the students' industry contact hours to the bridge the gap of mentorship currently existing between the university and industry. Similarly, improving learning outcomes through effective communication skills and building key knowledge area of Project management study awhile stressing the significance of controlling the performance.

Universities will be required to monitor student performance, which demands extraction of information from students to inform policymakers on ways to improve Student support resources which include mentorship as a tool for strategic development. Mentorship can be used as a policy mechanism designed to promote the career development and advancement in the context of educational administration in the country.

Policy makers should consider the implementation of structured induction programs that successfully inculcate mentorship programme into the new student at the point of initial programme enrolment as doing so would result in decreased attrition and increased retention of students in the study. Management's commitment towards effective implementation of mentorship induction programs for students of project management in the nation's universities should be sustainable for maximum positive impacts on their performance during their study and efficiency in industry on graduation.

References

Armenia Androniceanua, Risteaa, B., & Uda, M. M. (2015). Leadership competencies for project based school management success. *4th World Conference On Educational Technology Researches, Wcetr-2014* (pp. 232 – 238). Procedia - Social and Behavioral Sciences.

Bradbury, L. (2010). Educational mentoring promoting reform based- science teaching through Mentorship relationships. *Science Teacher Education*, 1049-1071.

Busse, H., Kipping, R., & Campbell, R. (2018). Developing a Typology of Mentorin programmes for youg people to attend seconday school in the United Kingusing Quaitative method. *Child and Youth Services review*, (pp. 401-415).

Erginer, A. (2009). A relational analysis between mentorship and Akhi organisation . *Social and Behaviour Sciences*, 224-229.

Goga, M., Kuyoro, S., & Goga, N. (2014). A recommender for improving the students academic performance. *Social and Behavioural Science*, (pp. 1481-1488).

Guerreroa, D., Palmaa, M., & La Rosaa, G. (2014). Developing competences in engineering students. The case of. Procedia - Social and Behavioral Sciences, (pp. 832 – 841).

Heide, B., Campbell, R., & Kipping, R. (2018). Developing a typology of mentoring programmes for young people attending secondary school in the United Kingdom using Qualitative method. Child and Youth Services Review, 401-415.

Heikkienen, H., Wilkinson, J., Aspfors, J., & Bristol, L. (2018). Understanding mentoring of new teachers, communicative strategis practices in Austriala and finland. teaching and techer Education, (pp. 1-11).

Hudson, P. (2013, November). Mentoring as professional development ,'growth for both mentor and mentee;professional development in education. Retrieved from www.researchgate.net.

Hudson, P., Hudson, S., Gray, B., & Blaxham, R. (2013). Learning about being effective mentors, Professional learning Comunities and Mentoring. Social and Behaviour Science, (pp. 1291-1300). Brtsbne.

Hudsona, P., Hudsona, S., Grayb, B., & Bloxh, R. (2013). Learning about being effective mentors: Professional learning communities and mentoring. Procedia - Social and Behavioral Sciences, (pp. 1291 – 1300).

Hyvari, I. (2015). Roes of top management and organizational project management in the effective company strategy implementation. Social and Behavioural Sciences, (pp. 108-115). Espoo.

Inger Bergmana, S. G. (2014). Teaching organizational project management at postgraduate level. 27th IPMA World Congress, 119, pp. 446 – 455. Semcon AB, Sweden.

Kang, M., Ran Yoo, Y., & Park, Y. (2012). Analyzing online mentoring process and facilitation strategies. Social and Behavioral Sciences, (pp. 5158 – 5162).

Kapusuz , Y. K., & Cana, S. (2014). A Survey on Lifelong Learning and Project-Based Learning Among Engineering Students. Procedia - Social and Behavioral Sciences, (pp. 4187 – 4192).

Marini Abu Bakar, M. A., Jilani., J., Jailani., N., Razali., N., Shukur., Z., & Juzaiddin Aziz, M. A. (2013). Student centered learning environment for project monitoring. Procedia Technology, (pp. 940 – 949).

Monkeviciene, O., & Autukeviciene, B. (2015). The competences of Education Mentors, fostering cange in the early childood Education. Social and Behaviour Science. (pp. 885-891). Athens.

National University Commission. (2018). www.nuc.edu.ng/nigerian-universities.

Porumb, I. (2015). The quality of mentorship in education – a resource in growing the attractiveness of teaching career. *The 6th International Conference Edu World 2014 "Education Facing Contemporary World*, (pp. 945 – 952). Sector 6, Bucuresti.

Saidoun, A. (2016). Successful Project Managemnet in North Africa with intercultural competences. *Social and Behaviour Sciences*, (pp. 218-225). Bonita.

Schwale, K. (2007). *Information Technology Project Managemnet.* thomson course Technology.

Sundströma, A., Widforssab, G., Rosqvistab, M., & Hallina, A. (2016). Industrial PhD students and their projects. *Procedia Computer Science*, (pp. 739 – 746).

Appendix

Case Processing Summary

		N	%
Cases	Valid	179	100.0
	Excluded[a]	0	.0
	Total	179	100.0

a. List wise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.839	.858	8

Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.576	2.240	3.944	1.704	1.761	.314	8
Inter-Item Correlations	.430	.062	.787	.725	12.649	.047	8

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ind1mean	24.8380	18.519	.985		.782
What was your graduating or present grade point average(CPGA)	26.3641	22.321	.247		.855

How would you rate the level of professional Mentorship	25.1294	18.638	.403	.	.858
How would you describe your experience as a PM Student	24.7886	18.939	.602	.	.816
How would you describe your soft skills in human relationship and leadership roles	24.6601	20.050	.595	.	.819
How would you describe your ability to analyses complex data	24.9674	18.788	.662	.	.809
How would you describe your understanding PM tools and techniques	24.7942	18.591	.710	.	.803
How would you describe your ability to use PM knowledge areas	24.6881	18.886	.602	.	.816