



Application for project funding: PUNKTUM

This template should be used to apply for project funding from the "Pedagogical development for curiosity and creativity at Umeå University" (PUNKTUM) fund.

Text in italics contains advice, giving directions and any examples for each section. You should delete this text and enter your own text in its place.

Text highlighted in red text indicates the criteria that will form the basis of the reference group's assessment and should also be removed in the submitted application.

On PUNKTUM'S website, you can find out more about the call, the assessment process and timetable for PUNKTUM 2015: <http://www.upl.umu.se/projekt/punktum/>

For the application to be processed, it must be completed in full.

1. Basic data

1.1 Project title

The title should give an indication of what the project is about. A possible subtitle can also be added with a maximum of 100 characters.

Student Active e-Learning Approach to Climate Change and Health Research Methods

1.2 Project leader

Please give the name of one person who is responsible for the project and provide their contact information.

Name: Joacim Rocklöv, Senior Lecturer, Associate Professor, Climate Change and Health Theme V Leader

E-mail: joacim.rocklov@envmed.umu.se

Telephone + 46 (0)90 785 1295

Dept: Umeå Centre for Global Health Research, Epidemiology and Global Health, Dept. Of Public Health and Clinical Medicine, Umeå University, SE-901 85, Umeå, Sweden



1.3 Signature of Head of Dept. or equivalent

The signee approves the project application and co-financing of the overhead costs.

Signature:

Printed name:

1.4 Signature of Dean

The signee approves the project application and co-financing of the overhead costs.

Signature:

Printed name:

1.5 Amount applied for

Please state the total amount you intend to apply for from PUNKTUM. This sum should mainly be used for wages.

137,289



2. Project description

2.1 Project purpose and background

Please describe the purpose, the context in which it will be implemented, why this project is important and how the project promotes the development of creative and flexible learning approaches and learning environments.

The primary purpose of this project is to develop a postgraduate e-learning course within the climate change and health research programme at the Epidemiology and Global Health Unit. Our proposed e-learning course planning, development, implementation, and evaluation aims to increase the quality and effectiveness of climate change and health research education along three dimensions: increased accessibility and sustained diversity, higher level pedagogical development of the programme, and student centred active learning.

E-learning simultaneously presents several key opportunities necessary for the enhancement of our research education programme. Firstly, transitioning our climate change and health research education to a web-based distance learning model enables our Unit to sustain the diversity in course offerings and participants through increased accessibility by greatly decreasing the financial and logistical hardships many of our students and teachers face in deciding to participate in the course in Umea. Secondly, the metamorphosis of the Climate Change and Health Research Methods Course into e-learning modules stimulates the development of progressive teaching methods and more flexible educational models adapted to 21st century learning. Thirdly, with we have an opportunity and obligation to greatly enhance the students' active learning experience by leveraging available resources in the online learning environment and collective expertise of course participants.

Currently, the Unit holds an intensive 2-week PhD course every year that focuses on climate change and health research methods for around 20 doctoral-level students each year. This course provides a unique and valuable training opportunity for Umea, Swedish and International students alike, as it is one of a few climate change and health training courses available in the world, particularly with respect to methodological training. The diverse collaborative nature of climate change science and the relative infancy of the climate change and health research programme at Umea University (~ 5 years) often resulted in an international interdisciplinary teaching team from Umea University and various other universities' faculties. Therefore, students and teachers often travel great distances to Umea just to attend our course; however, finances, logistics, and course availability still excludes many other interested participants each year. Not surprisingly, we annually have 15-18 participants attending that travel from Africa, the Americas, Asia and Oceania. Each session have strived to create consortia of global perspectives and diverse authorities, whose depth of experience and expertise and breadth of networks have had many positive aspects for the students. However, in the past, this changing teaching schedule and cast of instructors has also impeded the course's strategic development, pedagogical cohesiveness, reproducibility, and ultimately hampered aspects student centred active learning. We recognise the need to move away from this "academic as experts" model and to develop a better framework to improve the quality, flexibility and effectiveness of teaching and more importantly students' learning in our research group and Unit at large.

While we have acquired some co-funding to assist in travel and facilitate collaborations with international partners, resources are limited such that only few students can benefit from in-person research training opportunities offered each year. Therefore, we consider it imperative to attempt to find sustainable long-term solutions to better connect student with resources



pertinent to facilitating their own research development in climate change and health regardless of availability of travel funding, scheduling, and the number of seats in a given course each year. We purpose that learning technologies and especially the creation of an e-learning course could be a solution to some of the current problems facing the climate change and health research education. The development of a web-based learning platform will further increase the diversity of students able to participate in the course; provide more equitable learning access; and encourage more independent learning [1]. Such a resource will also enable our teaching program to become more student centred, allowing students to better learn how to transfer the diverse and complex skills they require for applying climate change and health research methods to their own projects and programmes [2, 3]. However, moving from a traditional face-to-face classroom approach to a web-based program is a challenging and time consuming undertaking [3]. Thus, rethinking our approaches to teaching and adapting our courses' learning activities to an effective online environment is paramount.

2.2 Project goals

Please describe the project's goals

Noting the demand for increased accessibility to our research team's educational offerings and the opportunity to enhance the quality of the education we provide by leveraging e-learning more in the future, the primary purpose of this project is to develop a postgraduate web-based course within the climate change and health research programme focused on student active learning.

The specific goals of this project linked to its purpose are as follows:

- To evaluate the strengths and weaknesses of past iterations of climate change and health research education in terms of class composition, course organization, pedagogical taxonomic content, materials, learning activities, and above all student learning outcomes by summer 2015.
- To generate new teaching materials adapted to the e-learning environment for the Climate Change and Health Research Methods Course with specific attention to increasing the active role of students in their own learning by autumn 2015.
- To roll out a full version of an e-learning graduate course on climate change and health by late spring 2016 after pilot modules of an e-learning course in different international settings with collaborating centres in Asia during autumn/winter 2015-16
- To share our "lessons learned" in the planning, development, implementation, and evaluation of transitioning graduate training modules on climate change and health to e-learning within the Unit's teaching community by autumn 2016.

2.3 Project activities

Please describe the activities that will be implemented in the project to meet the goals. Indicate any sub-stages of the project, their content, time plan and their goals.

Planning and past course critical evaluation

During the past year and continuing through the summer of 2015, as a research group, with aid of a co-funding grant, we are critically evaluating the past offerings of the Climate Change and Health Research Methods Course. Our analysis aligns with three dimensions needed for enhancement of upcoming iterations of the course: 1) our students' holistic experience with the course 2) our process in preparing and organizing the course content and learning

activities 3) opportunities and challenges for the transition to an e-learning environment. To facilitate the evaluation and planning processes, members of our research team have therefore, sought out opportunities to gain meaningful training through coursework offered by the Centre for Teaching and Learning and experiences in various web-based courses in related areas. These evaluation and preparation processes at the macro level can lead us to the redevelopment of the course's expected learning objectives at the individual learning activity level and are key for creating necessary alignment strategies for developing sustainable yet flexible e-learning materials. Furthermore, these reflective practices allow us to problematize the structure, order, role distribution, assessment, and evaluation of the course. Having taken the time to scrutinize the course, and taking on the opinions and experiences of many of the course alumni, we believe we will be better suited to identify opportunities for enhancing students' active learning, to find solutions ease course accessibility for all interested participants, and strengthen the overall pedagogical development of the course.

Development and creation of course materials and learning activities

This will entail the planning and structuring of an appropriate syllabus that moves away from the traditional "academic as experts" model and moves towards a protagonists approach [1]. To achieve the project team together with senior researchers in the Climate Change and Health research theme will meet and discuss specific learning goals, course content, format, learning tasks, assessments, and evaluations to be implemented [6]. The project funding will be primarily used to prioritize time and resources for the development of materials adaptable for e-learning and taking into account a purposeful pedagogical progression toward higher level thinking throughout the course. The activities we plan to conduct in order to generate new teaching materials adapted to distance learning involve members of the entire climate change and health research theme. We are actively seeking input of our students, lecturers, researchers, and support staff in addition to authoritative and technical resources outside our research team to aid in the generation of novel strategies for student active learning online. Once the framework and syllabus have been completed by the project team's leadership, project assistants will work directly with instructors and researchers to generate tangible e-learning modules based on expected learning objectives for each lesson. This will entail the recording and editing of a series of short teaching videos, readings, learning activities, assessments, online discussions forums, and lesson evaluations. We anticipate developing and incorporating a variety of interactive activities for students to join, such as discussion forums, brainstorming activities, question boards, case studies, and ask the instructor sessions. Furthermore, we anticipate the adoption of peer-to-peer strategies recommended by the Centre for Teaching and Learning for approaching problem-based learning modules in small groups, evaluation of fellow students' assignments, and synthesis of skills acquired during the course. The project assistant and leader will play crucial roles in the development of web-based learning resources and materials from the content developed in collaboration with instructors.

Implementation of e-learning course including piloting

We plan to pilot modules of the e-learning course as they are developed within the research team and with alumni of the course; however, we plan to pilot a preliminary version of the course with partnering institutions in Indonesia and Vietnam in coordination with an in-person training workshop. This will entail a "soft launch" of the web-based *Climate Change and Health – Research Methods* course. For this soft launch, the web-based course will be made available to research partners in Asia (including Umeå PhD students), who are collaborating

with the Epidemiology and Global Health Unit in a research links program. Research partners and students in Indonesian and Vietnamese institutions will enroll and take the web-based course and evaluations will be taken throughout the course. It is anticipated that the web-based course will run for during Autumn 2015. The soft-launch will be more heavily supported by collaborating researchers and available in-person consultation with members of the project leadership so that student learning during the pilot is not disadvantaged. The course will be evaluated by instructors and students following the soft-launch completion. In late spring 2016, once new knowledge from the pilot have been integrated and necessary improvements made by winter/spring 2016, we anticipate the launch of the full version of the course in spring 2016. The project team will have crucial duties during the course in terms of providing topical and technical support to participants and liaising with course facilitators, instructors, and content contributors.

Evaluation and dissemination of lessons learned

The evaluation of the course will play a crucial role in the sustainable benefits of the project. We will evaluate the students' self-accessed learning using the same evaluation tool during the live version of the Research Methods Course in 2015, the pilot e-learning sessions later in 2015 and the full e-learning course in spring term of 2016. The evaluation of the course will cover aspects of the learning platform (moodle, cambro, or otherwise), the content of the course, the quality of course materials, and most importantly aspects of student active learning including time allotment, collaborations, personal learning objectives met, etc. An evaluation of the course will also be completed by the project team and course contributors to assess how the course developed in these iterations 2015-2016 from an organization point of view. The combination of these two evaluations of the course experience along with ongoing monitoring during the project will be key to measuring the success of the project and generate useful knowledge for future enhancement of our research education, especially involving e-learning. We believe our experience in the development of this course and the project as a whole could be useful and transferrable within our Unit teaching team and seek to disseminate reflections on our experiences. The information gained in the course and project evaluation will contribute to the further iterations of e-learning modules on Climate Change and Health and hopefully other educational offerings of our Unit and Department. During the autumn of 2016, we plan to hold a dissemination event to facilitate a wider discussion of transitioning face to face courses to e-learning in the context of research education in public health.

2.4 The expected results of the project

Please describe the effects the project is expected to have.

Currently, the majority of our research education courses are still held on site and in person in Umeå. Given the international nature of the students, teachers and researchers connected to the Unit, web-based learning is an attractive alternative to teaching and facilitating specific learning goals in the Unit. Following the soft launch of the web-based Climate Change and Health-research methods course, we anticipate that this course will be made available to all Umeå and international students at the research level and that it will be incorporated into the teaching program of the climate change and health research theme. Furthermore, we anticipate modules of the e-learning course to contribute to Masters level courses and be further opened to other students, upon request. We expect that transitioning to an e-learning environment will increase the number of participants accessing research education provide by the climate change and health research programme annually by 25% during 2015-2016 compared to 2014-2015 leveraging an e-learning environment and possibly far more in subsequent offerings. We expect



furthermore, to retain and increase the diversity in student and teacher composition in terms of gender, geographical, and interdisciplinary representation within courses offered 2015 and beyond. Thirdly, as result of migrating some aspects of research education to e-learning, we anticipate that we will reduce the carbon footprint generated by our research education and thereby better align our practices with our values as climate change and health researchers.

The proposed project will tremendously benefit our students. The reduction of barriers to entry and participation in our course in terms of travel and scheduling in concert with problem based learning will maximizes the students' learning potential. Also, changing from a face-to-face classroom experience to a web-based course will shape new ways of teacher-student interaction, information sharing and communication that can be shared and discussed. We anticipate that setting aside ample time and efforts to the generation of an e-learning course with a deep focus of student active learning will facilitate more valuable and more personal learning experiences for our students, while simultaneously efficiently leveraging limiting resources of our teaching staff and researchers. Diversifying to a web-based learning environment will provide students with a more innovative, up-to-date, interactive, flexible, self-directed and student-centered learning experience. We believe this will enhance students' engagement and thus help more students successfully complete the course. Compared to our previous face-to-face courses, research education in the digital environment promotes international collaboration, self-reliance and motivation, asynchronous communication, and as needed solicit expert consultation-competencies utilized by many researchers in climate change and health projects given the multiple skill sets needed for each project. Furthermore, the proposed project will stimulate pedagogical creativity and increase the teaching capacity and competency of the Climate Change and Health research theme teachers as well as the teachers in the Epidemiology and Global Health Unit. Thus, we anticipate increased effectiveness and efficiency from the contributing teachers and subsequently, a higher quality teaching program resulting from this project. We believe this will enhance the overall learning experience of our students.

2.5 Project evaluation

Please describe how and when the project will be evaluated. Describe also how dissemination of project results will take place.

The project leader will monitor the team during the duration of the project and facilitate bimonthly meetings to internally communicate progress and disseminate pedagogically relevant milestones to the other course instructors. The evaluation of the success of the project will be based on two-arm evaluations conducted three times during the project. On one arm, the evaluations will include the perspective of the project team on the development and implementation of the course, while on the other students' perspectives on their learning experiences in the course will be evaluated. Evaluation will include a structure questionnaire and facilitated conversation about the course with both the project team in the week following the course offering and with students on the final day of the course. The first of three iterations of the evaluations will occur during the 2015 offering of the face-to-face course to establish a based-line. Following the pilot sessions later in 2015, we will conduct the second round of evaluations based on the 'soft-launch' models in the e-learning environment. The final evaluation will be conducted after the end of the first cycle of the e-learning course offering, anticipating in late spring/summer 2016. All evaluations will be structure to address progress in the dimensions of inclusiveness and accessibility, pedagogical enhancement of quality and higher level thinking, and student active learning activities in the course. The Planning-Development-Process-Product evaluation model developed by Zhang and Cheng depicted below will inform the development of evaluation tools for the project [7].

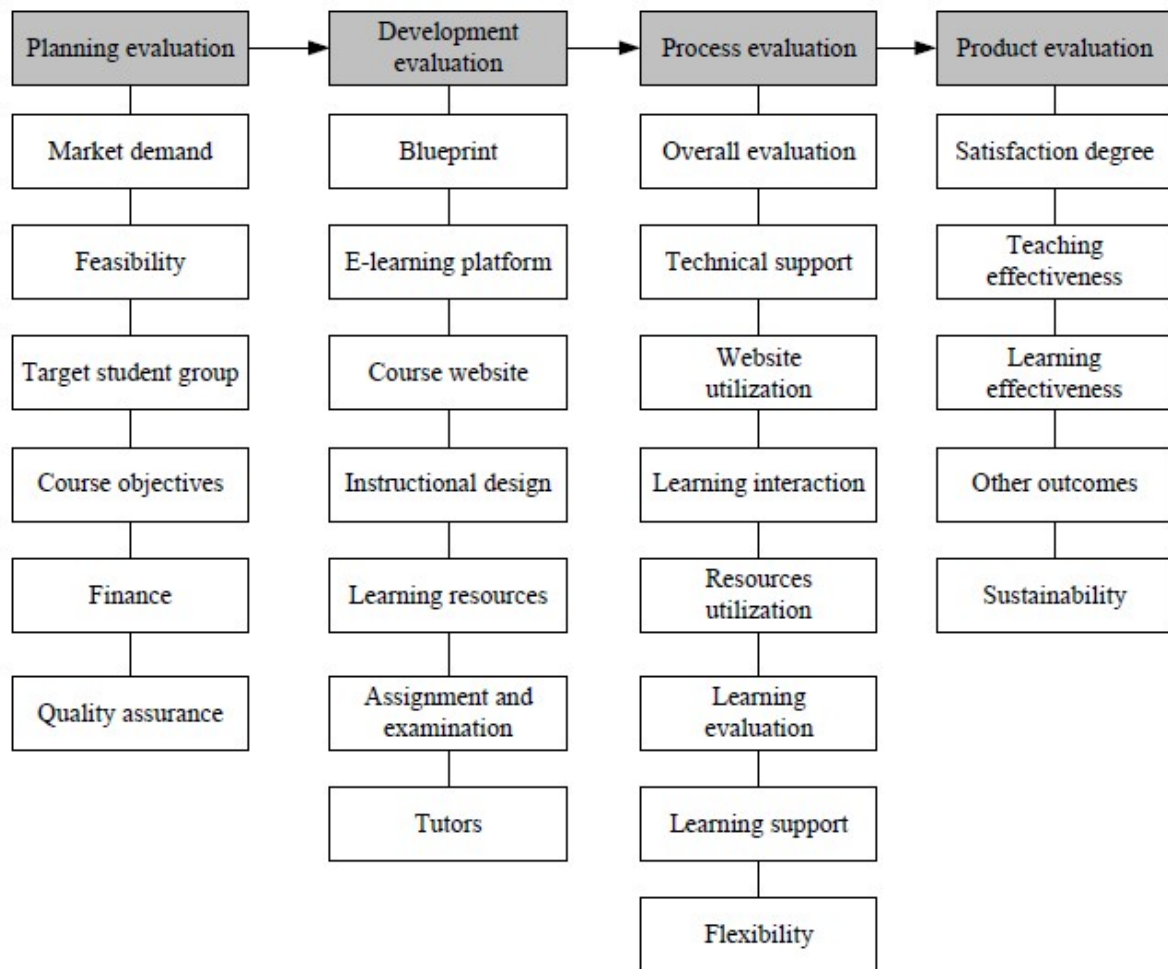


Figure 1. The PDPP evaluation model for e-learning courses.

The results of the evaluations will contribute to the development of a final report and dissemination packet for collaborators and stakeholders in the project including the Epidemiology and Global Health Unit teaching groups, PUNKTUM/ Centre for Teaching and Learning, and other Co-funding agencies. The dissemination of lessons learned and ‘best practices’ discovered during the course development project will take place during an event during Autumn 2016, however, resources will be retained and used in informing ongoing public health e-learning course development in our Unit.

2.6 Project organisation

Please state the names of project members, their approximate time/hours in the project, their roles and their responsibilities.

Associate Professor Joacim Rocklöv, who serves as the Research Theme V: Climate Change and Health Leader, will be responsible for the professional development, syllabus development, the development of a web-based materials and resources, launching of the course, and ultimately the evaluation of the course as project leader. In all of these duties, he will be closely assisted by Project Assistant Mikkel Quam, BA, BS, MScIH, PhD Candidate, who will act as co-coordinator of



face-to-face versions of the course and director of the course when implemented in the e-learning environment.

In close collaboration with Associate Professor Rocklov and Project Assistant Quam, researcher engineers, researchers, instructors, and doctoral students from the climate change and health research team will contribute to the development of the web-based materials and resources and the launch and evaluation of the course.

2.7 Time plan

Please state the starting date and finishing date of the project. If the project is divided into sub-projects or sub-goals there should be a time plan for these also. State when the final report of the project will be presented to the PUNKTUM committee.

We propose the project to officially begin 1st September 2015 and continue to until 31st August 2015, at which point the final report will be submitted to the PUNKTUM committee, however, some portions of past course evaluation and project planning are may begin earlier particularly as they related to co-financed project needs.

Planning

Milestone 1: Evaluation of past course syllabi and materials for face-to-face offerings for the postgraduate course in Climate Change and Health Research Methods

Timeframe: Milestone 1 will begin prior to the project start from spring 2015-September 2015.

Evaluated Output: In July 2015 a Strengths Weaknesses Opportunities Threats analysis (SWOT) will accompany the planning and past courses critical evaluation report, which will be submitted to disseminate to the PUNKTUM Committee and Units' teaching team.

Planning & Development

Milestone 2: Development of the syllabus for the postgraduate course in Climate Change and Health Research Methods

Timeframe: Milestone 2 will be undertaken from July 2015-September 2015.

Evaluated Output: In September 2015 a preliminarily e-learning course syllabus innovating course content and organization based on the critical evaluation of past courses will be submitted to the project team, and once finalised to the PUNKTUM Committee and Units' teaching team for evaluation and critique.

Development

Milestone 3: Development of a web-based learning activities and resources for a postgraduate course in Climate Change and Health Research Methods

Timeframe: Milestone 3 will be undertaken from September 2014-November 2015.

Evaluated Output: By November 2015 an active web-based course will be ready for student use in trial versions of specific course modules. While individual modules content will be complete, by this time, we anticipate further iterations and enhancements following pilot testing and evaluations.

Implementation

Milestone 4: Trial implementation of e-learning modules on climate change and health research

Timeframe: Milestone 4 shall occur November 2015-December 2015 with partners in Asia.

Evaluation Output: By the end of December 2015, reflections of the project team from the climate change and health research theme including Quam, Rocklov, and our hosting collaborators abroad, will critically evaluate the pilot course offerings and suggest improvements in the form of



a report disseminated to the PUNKTUM Committee and Units' teaching team for solution oriented discussion and advice, particularly in terms of student active learning, course accessibility, and pedagogical development compared to the June 2015 face-to-face course formative evaluation.

Implementation

Milestone 5: Climate Change and Health Research Methods Course E-learning inauguration

Timeframe: Milestone 5 shall take place in the Spring 2016 term, no later than June 2016

Evaluation Output: Course content development will continue throughout the autumn and winter until the complete course is activated in Spring 2016. By no later than June 2016, the project team will launch and administer the inaugural Climate Change and Health Research Methods Course in the e-learning environment, which will subsequently be evaluated against prior iterations of the course.

Evaluation

Milestone 6: Summative course and project evaluation followed by dissemination event

Timeframe: Milestone 6 shall take place July 2016-August 2016

Evaluation Output: A final report prepared by the project team lead will be delivered to the Unit teaching committee and the PUNKTUM committee by August 2016. The final report will be communicated in the form of a public presentation to interested stakeholders, funders, and fellow course coordinator within the Unit in an open dissemination event in August 2016 discussing the transferable lessons learned from the e-learning transition and project as a whole.

3. Budget

Additions to the budget you have presented in the attached budget template can be made here. Specify the costs that you have given in the attached budget template. Justify any need for other expenses (internal wages need not be specified beyond what has already been given in the budget template).

To successfully complete this project we request from PUNKTUM 137,289 SEK. In combination with co-financing (69% of total project budget), this funding is requested for to buy out 10% of Associate Professor Joacim Rocklov's time and 20% of Project Assistant Mikkel Quam's time for 1 year. The PUNKTUM funding (114,407 SEK+22,881 GU) would account for a substantial increase in Rocklov's time and Quam's time on the project. Additionally, we request 10% of other researchers and instructors time to assist in the development of e-learning teaching materials for the course. As shown in the attached budget, travel and external partners wages related to the development of materials, evaluations, and implementation of the pilot versions of the course shall be entirely funded by existing sources granted to the Epidemiology and Global Health Unit, as will the remaining portions of internal wages.



Applications should be sent electronically to the Registrar via the following email address: medel@diarie.umu.se. In the subject line of the e-mail please state the reference number: FS 2.1.6-1-15.

Applications must be in PDF format and be received no later than 24:00 hrs, 17 April 2015.

The original documents signed by the Head of Department/Unit and the Dean and if applicable the chairman of the program committee should be sent by internal mail to [Claire Englund](#), Centre for Teaching and Learning (UPL).

References

1. McGreal R, Kinuthia W, Marshall S, McNamara T: **Perspectives on Open and Distance Learning: Open Educational Resources: Innovation, Research and Practice.** 2013.
2. McLoughlin C, Luca J: **A learner-centred approach to developing team skills through web-based learning and assessment.** *British Journal of Educational Technology* 2002, **33**:571-582.
3. Jochems W, Koper R, Van Merriënboer J: *Integrated e-learning: Implications for pedagogy, technology and organization.* Routledge; 2013.
4. Roffe I: **E-learning: engagement, enhancement and execution.** *Quality Assurance in Education* 2002, **10**:40-50.
5. Block H, Dobell B: **The e-Bang Theory, Bank of America.** Retrieved June 6 2014 1999.
6. Vrasidas C, McIsaac MS: **Principles of pedagogy and evaluation for web-based learning.** *Educational Media International* 2000, **37**:105-111.
7. Zhang, W, and Cheng, YL **Quality Assurance in E-Learning: PDPP Evaluation Model and its Application.** *The International Review of Research in Open and Distance Learning* 2012; 13.3: 66-82

Löneberäkning (egen personal)

Ange månadslönen, LKP, antal månader och procent av heltid

Namn	Månadslön	LKP 2015 (49,8%)	% av heltid	Antal månader	Summa
Project Leader	46,000	22,678	10%	12	82,414
Project Assistant	28,000	13,804	20%	12	100,330
Other Researchers/Instructors	40,000	19,720	10%	12	71,664
		0			0
Summa löner (internt)		56,202			254,407

Löneberäkning (extern personal)

Namn/Organisation	Belopp
Collaborating Researchers/Ins	20,000
*Related external personal costs will be entirely cofinanced	
Summa löner (externt)	20,000

Övriga kostnader

	Belopp
Travel for Int. Pilot	100,000
*Related other cost will be entirely cofinanced	
Summa övriga kostnader	100,000

Procentpåslag 2015

	Procent
Totalt GU (v-het 11-13)	20%

Sammanställning

Ange er medfinansiering och sökt belopp

		Medfinansiering min 20%	Sökt belopp PUNKTUM
Löner (internt)	254,407	140,000	114,407
Löner (externt)	20,000	20,000	0
Övriga kostnader	100,000	100,000	0
Summa direkta kostnader	374,407	260,000	114,407
Indirekta kostnader (gem)	74,881	52,000	22,881
Summa projektkostnader	449,289	312,000	137,289
		Medfinansieringsgrad %	69%

*Cofinancing includes funding from 2 projects having related goals and objectives and the overhead costs on the cofinanced portion of the total project