

Designing for online homework guidance

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Abstract

This paper presents the preliminary research work on developing and conceptualizing methods and models for homework guidance and support of the training program offered by Homework Online (HO). The presented models are: *Curriculum framework for homework guidance*, *Scenes of Guidance* and *Model of guidance methods*. HO is an organisation led by State Library in Aarhus, Denmark. It manages the cooperation with municipalities, schools and universities with the aim to build, provide and operate a number of call centres for homework guidance in secondary education. The call centre offers guidance in an online environment. A part of the organisation Homework Online is to offer a training program that recruits and trains volunteer tutors. Homework can be defined as "tasks assigned to students by school teachers that are meant to be carried out during non-school hours" (Cooper, 1989). The purpose of homework is to extend learning beyond the classroom. Online homework guidance is the delivery of academic guidance in cyberspace where the communication between a trained academic homework tutor and learner is facilitated by using computer-mediated communication technologies (Richards & Viganó 2012). This guidance takes place through the use of a text- or audio based, synchronous communication program and a shared screen. The tutor and the learner don't know each other. The potential of homework online guidance is that student can access specialised expertise and get academic guidance specific to the learner's curricular challenges. The concept of HO is an example of 'networked learning' where interactions between people are mediated by computer/information technology (Goodyear & Carvalho, 2014). Furthermore HO is an example of a 'learning design', where it guidance activities is designed for learning on the basis of a pedagogical model. In this paper we report our research on the process of developing and testing new pedagogical models for homework guidance. We utilise pedagogical models as theory (Conole 2013) and Design Based Research (Gravenmeijer & Cobb 2006) as a methodology to investigate two research questions: 1. What kind of learning design (concepts and models) can contribute to develop HO's training program for new tutors in a way that can stimulate the strategically reflection of the educational designers of HO? 2. In what way can the new learning design contribute to the development of the tutors' competences in action and reflection on their role and practice as tutors?

Keywords

Online homework guidance, learning design, design based research, design experiments

Introduction

This paper presents the preliminary research work on developing, conceptualizing and designing methods and models for homework guidance and support of the training program offered by Homework Online (HO). HO is an organisation led by State Library in Aarhus, Denmark. It manages the cooperation with municipalities, schools and universities with the aim to build, provide and operate a number of call centres for homework guidance in secondary education. The call centre offers guidance in an online environment. A part of the organisation Homework Online is to offer a training program that recruits and trains volunteer tutors. Homework can be defined as "tasks assigned to students by school teachers that are meant to be carried out during non-school hours" (Cooper, 1989). The purpose of homework is to extend learning beyond the classroom. Online homework guidance is the delivery of academic guidance in cyberspace where the communication between a trained academic homework tutor and learner is facilitated by using computer-mediated communication technologies (Richards & Viganó 2012). This guidance takes place through the use of a text- or audio based, synchronous communication program and a shared screen. The tutor and the learner don't know each other. The potential of homework online guidance is that student can access specialised expertise and

get academic guidance specific to the learner's curricular challenges. The concept of HO is an example of 'networked learning' where interactions between people are mediated by computer/information technology (Goodyear & Carvalho, 2014, p. 11). Furthermore HO is an example of a 'learning design', where its guidance activities are designed for learning on the basis of a pedagogical model.

In this paper we report our research on the process of developing and testing new pedagogical models for homework guidance. We utilise pedagogical models as theory (Conole 2013) and Design Based Research (Gravenmeijer & Cobb 2006) as a methodology to investigate two research questions:

1. What kind of learning design (concepts and models) can contribute to develop HO's training program for new tutors in a way that can stimulate the strategic reflection of the educational designers of HO?
2. In what way can the new learning design contribute to the development of the tutors' competences in action and reflection on their role and practice as tutors?

The first research question addresses the educational challenges of the educational designers of HO and focuses on HO as an educational organisation, which has a need for developing a strategy for the organisations training program. The second question focuses on how concepts and models can support and guide tutors as practitioners in their tutoring practice and create reflection on his role as a tutor.

Theoretical background – Generating knowledge for design

The concept 'Learning design' can be understood as the design of a course with a specific learning objective, target group and a specific knowledge domain (Koper and Olivier, 2004, p. 98). A learning design specifies the teaching and learning process and is according to Conole (2013) driven by "pedagogical models that capture the teacher's beliefs and is a set of rules that prescribe how learning can be achieved in a particular context" (p. 120). Development of new pedagogical models is "notoriously difficult... however, without a clear explicit pedagogical model, it is difficult to guide teachers in designing new activities which make use of technical innovations" (Conole, 2013, p. 220). The reason why developing new pedagogical models can be difficult is that instructional designers often rely on tacit knowledge and prior experience when challenges with educational design problems arise. As a consequence, the educational designers have a need for research that can be useful for the development of learning design and design processes. The aim of this research is to generate "*knowledge for design*" with a focus on the connection between design knowledge, design practice, the outcomes of design and activities of the learners (Goodyear & Carvalho, 2014, p. 48).

Methodology – Design Based Research

The methodology is based on the research tradition and method Design Based Research (DBR) and its tradition of user-driven innovation research (Akker, 2006, Cobb, 2003). DBR can be defined as: *a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories* (Wang & Hannafin, 2005, p. 6).

The aim of the research is to improve educational practices and produce educational knowledge on design principles and guidance theories. DBR contributes with research on how guidance works in a complex interaction system and develops new knowledge and methods that can help to develop teaching and supervision in their practice. Development of new methods should address the problems in practice to guide and develop a better practice. The research process' underlying basis is a series of design experiments in four iterative stages: *analysis, design, development and implementation*.

In the analysis stage we made field studies on the practice of the HO call centres, conducted a literature review on guidance theory and analysed existing course materials in the training program. In the design stage we collaborated with the educational designers in HO on designing a new learning design, i.e. concepts and models, which we present below. In the development stage we presented, discussed and further developed the learning design with feedback from different kinds of stakeholders: educational designers responsible for training, experienced tutors and novice tutors in the training program of HO. In this stage we got an insight in the strengths and weaknesses of the learning design, and we pointed out areas for further development. Finally, the new learning design was implemented in the new course materials and the instruction of the training program

for new students who want to become tutors. Here we observed the learning design in use and interviewed educational designers and students to investigate on the learning designs effectiveness in stimulating the tutors understanding and reflection on their role and practice as tutors.

The outcomes of the DBR's design phase were three models. The first model was the development of a curriculum framework (CF) for homework guidance. The CF points out a set of learning outcomes that defines the content to be learnt during the training course. The learning outcomes defines what the tutor should know, be able to do and which values should guide the practice:

| | General tutor competence | Guidance competence | E-learning competence | Academic competence |
|-----------|---|--|---|---|
| Knowledge | Knows the philosophy of Homework Online | Knows the guiding models: The scenes of guidance and the strategies of guidance. | Knows the HO communication platform and its function. | Has subject related knowledge |
| Skills | Share knowledge Supportive to other tutors | Uses the guiding models. Offer differentiated guiding. | Uses online communication tools and resources. | Can find and guide about relevant subject knowledge |
| Values | Values being part of a community, based on cooperation, knowledge sharing and mutual support. | Values the learner's individuality and seeks to find his personal motivation. | Is interested in technology and stays updated about technology use. | Sees himself as an academic model and mentor. |

The opportunities of the CF are on the one hand to support the educational designers to explicitly communicate to new tutors the competence they are supposed to achieve. Second, it offers the tutor a framework for reflection and understanding what a tutor should learn. And third, it provides a framework for making the training program more academic and it provides a basis for further development.

The second model is a model of the guidance process called 'The Scenes of Guidance'. The model points out the four stages of a guidance session: welcome, clarification, guidance and exit. On each stage the tutor has two tasks: 1) the visible communication which metaphorically takes place on the 'front stage' and 2) the invisible reflection on the 'backstage', i.e. the mind of the tutor:

| Flow | Front stage - Visible communication | Backstage - Invisible reflection |
|--------------------------|---|---|
| Welcome and presentation | Mutual presentation | Pay attention to the dual function as an academic authority and informal friend. |
| Clarification | The learners pedagogical challenge Framing of time and roles | What is the learner's academic task? What is the learner's academic level? What guidance strategy should be used? |
| Guidance | Guidance methods: coaching, explaining, guiding, demonstration, co-creation, assessing, referring | Guidance situation – solving the task Develop opportunity and motivation |
| Summarize and exit | Evaluation: Was the learner pleased with the guiding session? | Reflection: How did it go, what went well and why? What should I consider for next time? |

The third model is a model of guidance methods. This model points out seven different kinds of guidance methods, which we observed as practice in the guiding session and made explicit in a model.

| Model of guidance methods | | | | | | |
|---------------------------|------------|---------|---------------|-------------|-----------|-----------|
| Coaching | Explaining | Guiding | Demonstration | Co-creation | Assessing | Referring |

| | | | | | | |
|-----------------------------|------------------------------|---------------------------------------|------------------------|------------------------------------|------------------------|--|
| Ask critical and clarifying | Explain concepts and methods | Describe procedures for solving tasks | Showing solving a task | Working together to address a task | Evaluate an assessment | Refer to materials: online resources, textbooks etc. |
|-----------------------------|------------------------------|---------------------------------------|------------------------|------------------------------------|------------------------|--|

The model of the guidance methods provides different kinds of guidance activities that a tutor can combine and use. The purpose of making these methods explicit for the tutor in the training program is to provide the tutor with a theoretical language on guidance that can support the tutor' action and reflection in-action and on-action (Schön 1983).

Results

The frameworks and models shown above are implemented in the training program's new course materials and we observed the use of the materials in a training program session. The research question is whether they can stimulate the educational designers strategically reflection and contribute to the development of the tutors' competences in action and reflection on their role and practice as tutors? We interviewed an educational designer, who is in charge of HO's training program, on that question and her response was:

"Now I have read the course material and I think it is very accurate designed with the things that we do in the various situations that arise. In our guiding practice we do not think about what we do, our practice is an automatic process and although it seems a bit of a search process to scroll through the material, it gave a very good understanding of what a tutor does in the situation. It seems the tutor get a clearer idea of what the course is about and what to be aware of on."

The models thus seem to mirror the existing practice of the tutor and provide an effective understanding of how new tutors can be socialized into the practice of guidance. The models serve as a new educational language that reflect and qualify existing action and reflection on practice.

We also asked a novice tutor, who participated in the training program for the first time. She said:

"It was really reassuring that the course began with an introduction and explanation of what *Homework Online* consists of. Then we were put in groups and could talk about what we had just heard, that way I got the theory into place and felt that I had been given a genuine understanding of "Homework Online". It worked so well with the natural changeover to the practical aspect, where we were both student and tutor. I thought that the course has been extremely good, I've really got a lot out of these classes."

The conclusion is that the framework and models both contribute to the development of design knowledge in the HO training program with an impact on both the HO's strategic development of the concept of homework guidance as well as on the tutors' academic understanding and reflection on their practice as tutors.

This research is an example of "educational innovation" (Conole 2013), where the use of digital technologies and the development of new learning design offer development of new pedagogical approaches and pathways to train and support tutors in their guidance of learners in secondary education.

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