IN SEARCH OF ONLINE LEARNING 3.0 IN HIGHER EDUCATION—THE ROLE OF THEORY-BASED PROCESS EVALUATION

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Abstract

In this paper, a model for theory-based process evaluation in online learning is suggested and discussed in relation to its potential as a tool to reveal strengths and weaknesses in a current online module in a fully online course in Educational Science Education. The suggested focal points at this stage of the process evaluation plan are based on socio-cultural outlooks on learning and guided by theory-based process evaluation theory. The evaluation model will be tested for the first time in autumn 2019.

Introduction

In the aftermath of the Bologna Process, expectations of quality in university education in Sweden have increased. At the same time, the shift towards broadened recruitment and mass education has led to increased differences between students' prior knowledge and skills in English and academic writing (Swedish National Agency for Higher Education, 2010 [in Swedish, Högskoleverket]). Accordingly, efforts to assure the quality of university education has been put in place, through national and local evaluations. The mandatory independent work essay stipulated at the national level for the bachelor degree seems to be the stage in education where the educators' ability to realise the expectations from this authority to meet increasingly heterogeneous student groups without adapting the teaching after the students who have the worst pre-knowledge is tested. The Swedish Higher Education Authority (SHEA [In Swedish Universitetskanslersämbetet]), which replaced Swedish National Agency for Higher Education in 2012, explicitly points out the independent work thesis as an important basis for assessing to what degree the students has developed the expected learning outcomes to meet the requirements for each degree. The independent work thus constitutes a basis for the assessment of the results of the education (SHEA, 2018, p. 15). As a result, many resources are spent on supervising students' independent work on the bachelor level, not the least because both the level of throughput and the result from national and local assessments of the quality of these bachelor essays determine the prospect of

retaining the power to award a degree as well as resource allocation (Norberg Brorsson & Ekberg, 2012).

But the shifts toward more heterogeneous student groups and higher demands on educational quality are not the only challenges in the university education of today. Over the past 20 years, the proportion of students participating in educational programs conducted online, without any physical meetings, has increased. These students usually constitute even more heterogeneous student groups than on-campus students, for example in aspects such as age and academic background, and often balance additional commitments, such as family and work, alongside their studies (SHEA, 2017).

Online students' interactions with their teachers, fellow students, and the academic environment differ from those of campus students. Students on campus have the opportunity to meet face to face to exchange thoughts and personal interpretations of instructions and expectations of their participation in course activities, whilst online students' communications with peers and teachers often are text based and asynchronous to enable flexible participation. Teachers in campus education are usually present during lectures, laboratory work, and seminars and thus able to immediately answer questions arising during activities, whilst the online students' lectures normally are pre-recorded and, in many cases, watched individually with no interaction with other students, the lecturer, or teachers.

Campus teachers have opportunities to observe the students' performances *in action* to identify to what degree the students' performance reflects that they have understood what knowledge and skills they are expected to demonstrate. This grants the teachers the possibility to interfere in these actions to shape and direct the students' performances - for example to demonstrate "how to do it properly" or by clarifying instructions and provide advice. Teachers in online education usually observe students' performances *after action* due to the course activities' flexible format. This means that the online students could have moved on to other tasks before they are provided extended direction and advice, without any feedback from the previous task to guide them.

Many online students are located in their own home during studies, thus lacking access to some of the informal cues campus students can use to enhance their understanding of the expectations on their performance, for example by "eavesdropping" on conversations between more experienced learners, reading a scientific paper on a wall, and so on. As a consequence, online students may have fewer resources than campus students to guide them to the ideals and expectations within the community of practice that they entered when enrolling in their studies. As we are arguing in this paper, we believe that the nationally identified struggle with students' performance on the bachelor's level could be even more significant in online education without any physical meetings. In this paper, we will present valuable tools to apply during the process to refine current learning designs to

help students develop the skills they need to demonstrate when they reach the bachelor level.

In the next section we will describe certain local conditions for online education at the Department of Education in Umeå as a background to the search for tools to enhance our current educational design.

The Case of Educational Science Education at the Department of Education in Umeå University

The department of Education in Umeå has been teaching online and distance students for more than twenty years. Over time the original basic usage of ICT has developed from simply providing information to becoming a virtual classroom in which much effort is put into the design to enhance the students learning experience. Today the majority of the staff enrolled in fully online education, ranging from basic to master level in Educational Science Education (as shown in Table 1), have many years' experience of teaching, researching, and creating educational designs, which means that many of us can be considered to be far on the way towards solid pedagogical digital competence (PDC), as defined by From (2017, p. 48):

> The concept of pedagogical digital competence refers to the ability to consistently apply the attitudes, knowledge and skills required to plan and conduct, and to evaluate and revise on an ongoing basis, ICT-supported teaching, based on theory, current research and proven experience with a view to supporting students' learning in the best possible way.

Our educational design and the instructions for the courses that precede the bachelor's level are usually collectively produced, based on theory and research on online education, and aimed to enhance online students' similar experience of teaching, social and cognitive presence as students on campus perceive. All courses from basic to master level are divided into modules and many of them include tasks designed to train students in academic writing and other skills of relevance for scientific work. Although the training is incorporated in all course work, special aspects of academic writing is highlighted in some modules through theory and training, as shown in Table 1 below.

Table 1.
Overview of Educational Science Education at the Department of Education, Umeå University, courses A-C

Course	Module Name	Core Content	Highlighted Academic Skills
Educational Science Education A	Introduction to Educational Science	History of educational science, areas of research	Academic writing (APA)
	Learning and Teaching	Learning and teaching in the light of theory and research	Reflection Education planning
	Human and Society	Social theories that form the basis of educational research	Theory driven analysis Identify, collect and value scientific publications
	Upbringing and Socialisation	Upbringing in historical and social perspectives	Qualitative interview in theory and practise
Educational Science Education B	Research Processes and Methods	Introduction to scientific work Qualitative and quantitative theory	Formulate and motivate research problems of relevance for Educational Science Qualitative and quantitative data analysis
	Learning and ICT	Theories and research on learning with ICT	Peer review
	Normalisation Processes in Education Practices	Theory and research on how the view on normality is constructed	Oral presentation Ethics
	Independent Work (on basic level)	Plan, conduct and report a pilot study in Educational science	Academic writing Constructing instruments for data collection and analysis
Educational Science Education C	Research Processes and Methods in Educational science II	Scientific theories, methods and ethical considerations	Formulate and motivate educational research problems Quantitative and qualitative data analysis
	Bachelor Essay	Planning, conducting and a reporting a study of relevance to the Educational science research field	

The online students' answers in the questionnaires provided at the end of each module, in which they are asked about how they have perceived the education, indicate that they generally perceive the course design as a sufficient support for their learning, including aspects such as their interaction with peers and teachers. The online students' learning and progress is also in general perceived as satisfactory by the teachers. This indicates that we seem to provide a sufficient learning environment with a good potential to enhance our students' development of expected knowledge and skills. However, as the online students enter the bachelor essay module, similar flaws in skills in academic writing as recognised in campus education (Norberg, Brorsson & Ekberg, 2012) surface and may be more severe in settings like our Educational Science Education which is provided

completely online with no physical meetings. These flaws in students' understanding and academic skills are already visible in the last module in Educational Science B, "Independent work" (on basic level). The content and design of the module "Independent work" are meant to support that the students "tie the bag" of knowledge and skills achieved from previous modules. This is supported by activities targeting planning, conducting, and reporting of individual pilot studies in which every step is processed in group seminars and feedback from the teacher.

However, the teachers tutoring online students during the module Bachelor Essay perceive that several of these students still need much supervision. There are always some students with great difficulty producing an essay of sufficient quality in order to be assessed as approved. We also find that some students struggling with the essay work will drop out, never to return, as the throughput of the students enrolled in the Bachelor Essay module usually is between 50-82 percent. This indicates that some students on this level, despite that their demonstration of knowledge and skills during previous modules has been recognised as satisfactory by both themselves and their teachers, have not fully understood what qualities their essay work is expected to reflect.

As we strive to increase the throughput and upgrade a seemingly well-functioning online course design (2.0) to an excellent design (3.0), we found it necessary to investigate the discrepancy between the perceived quality of archived skills and the students struggles during the work with their independent work on the Bachelor level. We also belong to a department which focuses on processes through which man is formed and changed in different social, cultural and historical contexts (Department of Education at Umeå University, 2018). This scientific interest directed our curiosity towards the aim to generate an in-depth understanding of what learning processes the current arrangements in Educational Science Education support, and what they do not support.

In our search for strategies to answer our questions about what changes we should make to strengthen our educational design we reconnected with the theoretical tradition at our department, in which theory-based process evaluation is found to be a vital instrument to refine educational practice. As Franke Wikberg (1990) expresses, it is necessary to have an awareness of the essence of evaluation as a starting point of evaluation and further development of existing local educational practice. This includes the recognition that the quality of educational practice cannot be understood by simple measurements of outcomes. We have adopted this outlook and have employed the principles suggested by Franke Wikberg as we have sketched on our own model of theory-based process evaluation, in which we are combining evaluation theory with sociocultural outlooks on learning. In the next section we will provide the tools we have derived from these theoretical traditions.

Theoretical Underpinnings

In the wide spread "Umeå-modellen" developed by Franke Wikberg (1990, pp. 14-15) ten principles for theory-based process evaluation are central. These principles are [our translation]: a holistic perspective, a focus on explanation, an acknowledgement of the social context, a local development, self-evaluations, local support for development, exchanges of experiences between peers, an "open door" policy, visible values and declared outlooks (including theoretical) and most importantly, the awareness of the essence of evaluation.

In this paper we have tried to describe the context in which Educational Science Education is provided and we have applied a focus on local development. The model suggested in this paper, as our first draft to outline what to target in our self-evaluation, makes it necessary to apply the principle of visible values and declared outlooks, which we are putting forward through the description below. The theoretical origin goes back some decades and is based on the notion of the situated nature of knowledge and learning as constructs, produced and distributed within a 'community of practices' (e.g. family, workplace, school) through constant negotiations on meaning during community activities (Brown, Collins, & Dugid, 1989; Rogoff, 1990; Lave & Wenger, 1991; Wertsch 1991; Rogoff, 1993; Säljö, 2014).

Wenger (2004) suggests that a community of practise is not just a personal network; it is about a domain, an area of knowledge and ideals that brings people together and shapes the group's identity and defines the key issues that members address. The community is the group of people for whom the domain is relevant, and what the members in the community do together, and the tools they share, is what Wenger labels as the practice. Each community has its own purpose, traditions, and ideals. Usually, some members are more experienced than others. This means that newcomers (for example students) will be guided to these ideals and traditions through directions, the response to their own ideas, and by observing more experienced members' actions during community activities, and will start to appropriate ideals and how to use the communal tools (intellectual and physical) in the community activities.

The widespread outlook on learning offered by sociocultural theory often underpins course designs in the context of online learning. Research with this outlook has identified the importance of enforcing online students' notion of cognitive presence (Rourke, Anderson, Garrison, & Archer, 2001) so that the participants can construct meaning through sustained communication, social presence (in which the teacher and participants come across as 'real persons" (e.g. Oyarzun, Barreto, & Conklin, 2018), and teaching presence ("design, facilitation, and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes through enforcing collaboration and mediating actions", Garrison & Arbaugh, 2007, p.163).

In the context of education, the teacher could be regarded as an experienced member of the community of practice within the department responsible for the course the online students participate in. Thus, the teacher is in a crucial position to mediate the ideals cherished within the particular community. The teacher's role is to shape and direct the students' performances in line with the ideals of the local community and the nationally stipulated expected learning outcomes. Expectations on performance can sometimes be rather multi-dimensional, and therefore make it difficult for beginners to understand what actions to take to solve a task on their own. The term "scaffolding" is often used to describe the teacher's function as a more experienced community member that assists learners to succeed at difficult tasks. Sadler (2007) describes scaffolding in these terms:

> Properly understood, it means providing appropriate supports during learning so that learners are better able to bridge the gap between what they bring to the learning task, and where they need to be to achieve a deep level of learning. (p.390)

Since learners and teachers are not physically present in online learning, the online environment must be designed to enforce these processes and embedded with functions to scaffold learners' self-regulation skills so they can remain engaged despite the lack of the physical presence of others (Delen, Leiw, & Wilson, 2014). Accordingly, our design for online learning includes activities like online seminars, recorded lectures, forums in which students are interacting with each other and/or their teachers, student generated video presentations, tasks and instructions to stimulate peer discussions and plenty of formative feedback to direct and scaffold learning. However, as put forward in this paper, there are some indications that the current learning design might need adjustment, despite the fact that it is a collaborated product by experienced teachers and research in the field of online learning. This calls for a deeper investigation of strengths and weaknesses in the current design for online learning if we want to move from "good enough" teaching to an excellent level.

Deciding What to Evaluate

In this section, we will describe and discuss our recommendations of aspects to target in a theory-based evaluation based on sociocultural theory of learning design.

National and Local Ideals

If the students enrolled in courses in educational science are regarded as new members of a community, formed with a certain purpose and engaged in activities underpinned by community ideals, it is important to begin the evaluation by understanding what these ideals are about. But educational activities at a

university cannot be regarded as only a matter for the course-giving institutions as all educational activities must follow national directions and will have to pass the national evaluations. This means that it is of value to derive ideals from national documents and descriptions of Educational science, the descriptions of this discipline at the local department, and the values mediated through the formulations in course curricula and expected learning outcomes.

Students' Prerequisites

Since the students have participated in communal learning activities throughout previous modules in Educational Science A and B, they are expected to have appropriated some of the ideals and the expected ways to use valued tools in Educational Science and academic writing. It seems fruitful to investigate to what degree such outcomes of previous modules are visible during their participation in early activities of this last module, to shed light on a potential lack of guidance in previous modules, as well as what to focus on in "Independent work" to close potential gaps. It is also valuable to collect information from the supervisors of the bachelor essay to complete the picture.

Scaffolding Potential in Design, Instructions and During Course Activities

Drawing on how scaffolding can fill a function in shaping and directing students' learning and actions to reflect the ideals within the community of practice, we also find it valuable to review what the overall design and structure of the module and the activities could provide in terms of a reflection of ideals. Instructions and teachers' feedback on tasks are also intentionally created, thus underpinned with ideals and expectations of students' performance; it would be worthwhile to scrutinize documents to investigate to what degree the formulations have the potential to mediate such ideals.

During the whole evaluation process, the scrutinizing of these aspects must be in relation to the identified ideals, thus stimulating a process in which the results of the evaluation are useful to guide the re-design process.

Discussion

We believe that an evaluation of conditions in the last module would be valuable not only for the re-design of this particular module, but also to generate a greater understanding of what possible changes need to be implemented in the previous modules, A and B. By putting the suggested evaluation in practice during autumn 2019, we also hope to be able to identify whether we have the functional theoretical resources to understand in what ways we can maximise the students' learning, thus aspiring to develop online learning 3.0.

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