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DIGITAL ASSESSMENT IN HIGHER VOCATIONAL EDUCATION IN NORWAY – STUDENTS AS PARTNERS

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Abstract

This paper presents a model of digital assessment in online study programs at Vestfold Tertiary Vocational College (VTVC). The model is part of a larger change in the pedagogy and didactic practice in online study programs at the college. This paper presents the larger pedagogical and didactic model as context for the assessment model. The goal has been to design online electro study programs that are in alignment with White paper 16, 2016-2017 "Quality Culture in Higher Education" [1], in which more student active teaching and alternative methods of assessment were called for .Our long-term goal is to contribute to a culture of quality in assessment in all the vocational colleges study programs. In Norway, the term "online study program" will sometimes be purely web based, making use of the learning platform/VLE for sharing and publishing content, assignments, feedback and communication asynchronously. Sometimes there are webinars, which are online lectures in real time. However, online study programs quite often include physical meetings at campus, and are really more a blended model. Yet another model is to use "flipped classroom", where the lectures are prerecorded and time spent with the teacher in a videoconference is about deepening their understanding of the subject. In these different models, all called "online study programs", there are different pedagogical and didactic approaches, which in turn define the model of assessment in use.

VTVC has been developing a model for their online study programs, which to an even greater extent than the above, invites the students in as partners.

Introduction

National background

Since 1998, when OECD [2] described Norwegian higher education institutions as «exam giving institutions» much has changed. According to the OECD, too much emphasis was on control of students and on grades at the expense of teaching and learning activities. In 2003, the Quality Reform of higher education was introduced. This marked a full integration of the Bologna Declaration as signed at the Ministerial Conference in Bologna (1999). In a White paper from 2000-2001 outlining the content of the reform [3], more student active teaching and alternatives to the traditional exam were called for. A national evaluation of the reform showed that alternatives to the traditional exam had indeed been introduced, but the report also showed that these alternatives typically came on top of an already existing final exam [4]. Recent developments have been the introduction of a Norwegian Qualifications Framework for Lifelong Learning, a system of Centers of Excellence in University Education, and – most recently - the launch of White paper 16, 2016-2017 "Quality Culture in Higher Education" [1]. The white paper is "… a clear invitation to higher education institutions to take a leading role" (p.3) in making sure that the students acquire necessary skills, but also the ability to renew themselves, in order to become "… attractive and productive employees who will help to shape society for the next 20 to 30 years." (p. 3). Building a quality culture is a dual responsibility in which both students and teachers/administration play important roles. The way our teaching programs are organized, both in terms of teaching, learning activities and assessment, is also important in shaping the culture.

Technological development as driver of educational development

With the rapid development of educational and personal technology and user behavior, a similar development in teaching and learning could be expected. However, higher education in Norway 2018 is still mostly analogue and traditional[1]. Even where technology is used, it is mostly to support traditional methods. Examples are: using video to record one-way lectures or special software to administrate written, individual exams. However, there are indications that use of technology supporting student active teaching is slowly increasing. The development of MOOCs has led to lectures from accredited universities and schools being openly accessible, and many MOOCs have made the use of peer assessment to cater for the assessment of massive bodies of students. Today we see an increased use of peer assessment in tertiary education in Norway as there are now easy-to-use applications to cater for the administration and the quality assurance of such assessment[2]. Likewise, there can be no doubt that written, oral and non-verbal representation have blended into a new form of communication with the development of personal video recording and publishing equipment (such as smart phones, integrated microphones and camera in PCs, Facebook, YouTube etc.), and that this development in turn affects communication in education. Students submit video assignments and tutors create feedback videos. There are examples of these videos replacing written texts in both formative and summative assessment, and at all educational levels, from kindergarten to university. These changes are still tutor led and organized at an institutional level. Despite this, around us informal and collective learning is taking place every day, facilitated by social, personal and enabling technology.

Developing quality in eLearning

It is beyond any doubt that digital technologies offer great potential for teaching and learning. However, many examples of integration of ICT in educational processes do not seem to enable the learner, or promote the initiative and say of the learner. There is a need for novel learning designs to be incorporating space for diversity, (meta-) dialogue, democratic dialogic principles, and to make use of inclusive pedagogic strategies in digital or blended learning context and environment [5]. This is a responsibility of teachers, who are educated to obtain pedagogical insight. To be an educator using ICT and to practice the field of IT-didactic design of an educational program or a course is not an innocent affair. It always brings along a - potentially latent - view on what learning is, or what it should be. Therefore, pedagogical assumptions, awareness and insights should be made explicit, when reporting on the pedagogic/didactic decisions (and their rationale) made.

VTVC´s model of both online study programs and assessment, as well as this paper depart from the assumption that quality in learning is both a collaborative and personal endeavor. Furthermore, that – epistemologically and ontologically – this is closely associated with the pedagogical approach Problem Oriented Project Pedagogy[3] (POPP). This in turn means quality issues such as processes of (1) dialogue, (2) reflection, (3) negotiation of meaning and collaborative knowledge building dialogue in the interaction/communication between both students and teachers, and between peers.

Such processes of education, cultivation or socialization are for a large part mediated through a certain educational system and its pedagogical approach. This happens partly directly, through a process of awareness cultivated in the learner, and partly indirectly, because of the chosen instructional methodology and the way this is implemented in the pedagogical design. In other words, through the pedagogy applied as well as the didactic choices made by the teacher/program designer.

In a meta-learning perspective, learning together in an online learning architecture - while at the same time being engaged in learning activities, based fundamentally on collaborative dialogue and the sharing

[1] E.g. The report on the state of Higher Education 2018 from the Ministry of Education and Research, and "studiebarometeret.no" from the Norwegian Agency for Quality Assurance in Education

[2] Presentations of preliminary results from ongoing projects in Norwegian university colleges

[3] POPP is a student-centred approach to learning and instruction, which, in principle, rests on problem orientation and collaborative group work. It truly integrates the perspectives of the individual participants and allows them to take "ownership" in relation to all aspects of identification in the learning process (Dirckinck-Holmfeld, 1990)

of values - cultivates democratic skills, attitudes and citizenship in learners for the benefit of global prosperity [5], [6].

The Study

A brief presentation of Vestfold Tertiary Vocational College

Vestfold Tertiary Vocational College is the oldest technical vocational college in Norway and today provides “higher practical education” for professionals in the areas of health and electro. The college offers two health programs and three electro programs. These programs are part time and involve classroom attendance. Approximately 300 students attend the college each year, in a small town in South East Norway. In addition to the five full time study programs, the college has accreditation for a year-long, part time, online electro program called “electro technician”. There are, now, two year-long, part time, online study programs pending accreditation by NOKUT - the Norwegian Agency for Quality Assurance in Education.

Students participating in online study programs at VTVC are mostly adults with daily work and family life, studying part time. They already have a professional certificate in their field, and are highly motivated to expand their knowledge. Both the students and their workplace expect the students to be able to perform based on their newly achieved competences in their daily work, without further training. Therefore, education in tertiary vocational colleges should be both problem-based and practice-based, so that the students learn how to solve relevant problems while studying. The students expect an effective and flexible education and a high degree of relevance between the curriculum and their daily challenges at work.

The development of a new practice and culture of assessment in online study programs

To be able to focus on the task of developing a new model of assessment for online study programs, the college applied for and received funding from the Ministry of Education and Research for a development project during the second part of 2017. The project design called for collaborating with researchers in the field of online studies and assessment as well as with other tertiary vocational colleges. Because of previous contact and collaboration, VTVC invited the Tertiary Vocational College of Sogn and Fjordane to participate. VTVC invited two researchers, Professor Arild Raaheim from the University of Bergen and Professor Elsebeth Korsgaard Sorensen from Aalborg University to join the project. We also invited senior Advisor Kari Olstad from Flexible Education Norway to join in. Flexible Education Norway supports development and quality assurance in online and flexible education. Online teacher Vidar Luth-Hanssen, Head of Development / eLearning coordinator Vivian M. Luth-Hanssen and Principal Ola Småkasin participated from VTVC. Vivian M. Luth-Hanssen was project manager and secretary for the project group.

In the process of developing a new model of assessment for online studies, the project group has paid attention to Biggs, J. and Tangs, C.´s theory of constructive alignment [7]. Biggs calls for alignment between teaching objectives, teaching- and learning activities and assessment.

It quickly became obvious that there was alignment between outcomes, teaching and learning activities and assessment in the old model, used in the existing electro programs. The traditional approach was characterized by lectures and tutorials, based on transfer of information through “chalk and talk”. Students were assessed by traditional exams, where focus was on testing how much, and what kind of knowledge they had obtained.

Moving from such a traditional setup, towards a new model where focus would be on both specific and generic competences, we had to transform not only our assessment practice, but also rewrite the learning outcomes. In order to ensure constructive alignment in this model, we also had to change our teaching- and learning activities.

We have named the new model, which VTVC now uses as a template for all online studies, “The Vestfold Model of Online Studies”. It is based ontologically on the idea of knowledge as a meaning-making process between participants in a context. This leads us to an epistemological stance of understanding learning as a collaborative process. At the center of the model is an understanding of

the needs of adult learners to find meaning in their learning and to be able to connect their learning outcomes with both their personal and professional development needs [8].

The study program was, and still is, organized by four parts on three online tools; synchronous lectures using Adobe Connect as a tool for videoconferencing, a “classroom” on Moodle, which is an open learning platform, and a Facebook group for each “class”, which is closed for others. The fourth part is learning reports for school leaders, teachers and students based on learning analytics from all the tools. Adobe Connect has an important feature, which enables teachers to place students in separate “group rooms” during the lecture. Every fifteen to twenty minutes the students are asked to reflect on the lecture, using a provided structure, in their groups. The groups are held constant for each online lecture. The students review the content of the lecture so far, and discuss the connection between their daily work and the presented material. The teacher records each lecture and makes it available for students on Moodle. Here the students can hear lectures in a recorded form, as well as find assignments and tests, learning material such as articles, videos, instructions and so on. An important part of the classroom is a blog, which the students are required to use for collaborative learning.

The backbone of the learning activities is student reports and assignments. After each online lecture, the students submit a report, which consists of three parts. They compile a summary of the lecture and their ideas on how to operationalize their new knowledge into their own workplace. Finally, they write a reflection on their own learning process. To help them write the reports, a “robot” gives them written feedback before they turn their work in for assessment. The robot suggests words and terms they could write about, including the assessment criteria. The teacher programs the robot with words and terms specifically for each report to reflect the material they are working on.

Submitted reports and other assignments are open and accessible for all the students in the class, along with the teacher´s feedback and assessments. They are considered an important part of the learning resources. Students are encouraged to read each other’s work and to learn from each other. In the early stages of the model, the students received feedback and assessment only from the teacher.

The reports are important as learning activity because feedback from the work place tells us that many of the workers are weak on written documentation. Documentation that is correct and understandable is very important in the electro field. It is therefore an important objective to strengthen the students’ ability to document their work and to contribute to organizational learning in their workplace by developing a shared language for their work.

The reports and assignments are for now considered learning activities being assessed by the teacher formatively to enhance the learning process.

A new model of assessment

In order to secure better alignment in the new model, we decided to make some changes concerning the assessment practice. The first big change was to include the students as partners in establishing assessment criteria. In line with Meer and Chapman [9], students participate in discussions of assessment criteria for each assignment, “…in order to equip learners for the challenges of learning and practice they will face once their current episode of learning is complete” (p. 2). As a next step, students will work in study groups of three or four, and give feedback and assess each other´s reports. Students will still receive feedback from teachers.

The second big step in securing better alignment is to omit all exams and instead use portfolios. Reports and assignments are to be formatively assessed by both peers and teachers, and placed in working portfolios. They can work on improving their portfolio items until they present their work in a presentation portfolio at the end of the term. Their presentation portfolios will be subject to a final summative assessment. The same assessment procedure will apply to all assignments and projects throughout the education thus introducing what Beck, R.J., Skinner, W.F. & Schwabrow, L.A. [10] and Adesemowo, K., Oyedele, Y. & Oyedele, O., [11] describe as ‘sustainable assessment’.

Feedback

According to Hattie and Timperley [12] the quality of feedback from both peers and teachers is essential for learning. In our model, feedback is closely connected to the criteria students and teachers have agreed on. Students use the criteria in their peer assessment and in doing so also develop an understanding of the nature of the criteria, and understand both curriculum and assessment better. They learn to be concrete and helpful in their feedback.

The teacher does not give feedback outside of the established criteria. Students are entitled to transparency in the teacher´s assessment process, so that they can decide if it is fair and trustworthy. The teacher functions as a role model for the peer assessment by giving feedback that highlights good performance, and giving advice on how to improve. This is known as feed-forward [12]. Sometimes, depending on the subject, it is necessary to point out when the student has misunderstood or failed. This is done as suggestions for the student to try out, and is designed to support the students´ self-efficacy [13].

Learning Analytics and feedback

The model includes use of learning analytics from the digital tools, to assess the students' effort, their progress according to plan, their self-assessment and their experience of the learning environment. An eLearning coordinator writes monthly reports for the students and for school leaders and teachers, enabling the latter to monitor the overall quality of the study program. The eLearning coordinator supplies both school leaders and teachers with recommendations in the report, based on the information gathered. The objective is to heighten the students´ learning outcome by making sure that both teachers and administrators do their best to present adequate learning paths.

Preliminary findings

So far, the online study program model is being tested in three classes of an electro online study program at VTVC, and we present some preliminary findings based on feedback from stakeholders. We have also tested negotiation of assessment criteria with students attending an electro study program at OsloMet University. The latter is not an online study program. We have based our findings on talks with school leaders and teachers, as well as observations made by both groups and the eLearning coordinator. The findings also reflect feedback from students, both written in their reports, learning analytics and in informal conversations with their teachers. Finally we have included a finding from a short online course, where we also tested some of the changes in our assessment practice.

Negotiation of assessment criteria

Students have mostly reacted positively to being involved in deciding on which criteria to use in assessment of reports and assignments. In the beginning, it has proven difficult for some to have any idea about the relevance of the criteria, but with exercise, the concept has become clearer for all students, and they are appreciating the process. The online teacher is surprised by how much focus the students have put on the criteria, and how it has influenced their work. It turns out that they let the criteria be the outline of their response on reports and assignments. The robot is also helping them to write both more volume and more relevant. Gradually students are displaying their growing ability to assess both themselves and their peers when they discuss with the teacher.

At the same time, the teacher is pressured to pay more attention to the quality of the written feedback he gives. The process of discussing criteria forces him to give feedback accordingly, and not to venture off into other issues that are not part of the criteria. It also gives the students the transparency needed for them to either accept or oppose the teacher´s assessment.

The online teacher also teaches in full time study programs at VTVC, which are not online. Because of the positive results from online study programs, he has brought the process of discussing criteria with the students before they submit their assignments, into the physical classroom. At first, the students reacted with puzzlement, but have quickly caught on. They are now critical of other teachers, who do not share their assessment criteria! The students more often than not don´t understand why other teachers are marking them in certain ways. When asking the teachers what their criteria are, the teachers are exposed for not explicitly having any. It turns out that they rely on their gut feeling, and refer to their long experience as teachers when students confront them. Students experience this

assessment practice and culture as unfair and demotivating. The head of department has received complaints from students concerning the assessment practices, and has decided to transfer the online model into the full time study programs. As mentioned in the introduction, a change in assessment practice and culture should cause discussion on both learning outcome and learning activities in the full time study programs if there is to be alignment. Thus, a change in the assessment practice and culture will inform changes in learning outcome and activities in the full time electro study programs.

We have tested peer assessment recently in a short course by VTVC for teachers from different tertiary vocational colleges on pedagogy and didactics used in our “Vestfold Model”. The instructor didn´t explicitly ask them to use the negotiated criteria in their peer assessment, as she expected that they were accustomed to doing this in their daily practice. Much to our dismay, the teachers did not use the negotiated criteria in their feedback during their peer assessment. They used criteria, which were irrelevant to the course and did not include the agreed on criteria. This came as a surprise, and suggests that other educational institutions also need to develop their assessment practice and culture.

Peer assessment by students will need scaffolding, such as a template for written peer assessment and guidelines for appreciative feedback and feed-forward. We are now using our findings so far for preparations for the next class in the electro technician online study.

Lecture reports
It is essential for students at tertiary vocational colleges to link their learning process to their daily work life. The law governing the practice of vocational colleges requires it, but it is also important for the students so that they can maintain engagement and motivation throughout the program. In each report, the students have the option to suggest other adjacent topics linked to their daily work, that they would like the teacher to include. Many of them have used this option. This provides the ability to strengthen the relevance and learning output for each single learner and informs the teacher on developing the curriculum.

As students have submitted more reports, the teacher has observed that they are becoming increasingly better at writing, using the terminology of their field, and are becoming more creative in how they intend to use their new knowledge in their daily work.
The practice of including the assessed reports and assignments as learning resources for all students in the “class” helps online students to complete the program and get their degrees. When the eLearning coordinator discovers that a student is falling behind, she encourages him to try to attend the lectures, and then later do the obligatory work by leaning on the open learning resources on the platform. It is also possible to hear and see the recorded lectures at a more suitable time. This has proven to work well with students struggling to keep up. It makes the program flexible for the adult learner.

Learning reports based on learning analytics by eLearning coordinator
So far, the completion rate for the online electro study programs has been higher than for the traditional programs. There are likely several different factors in play. One of our hypothesises is that the very close monitoring of students´ learning outcome and quick feedback / feed-forward on their reports and assignments is important. Another hypothesis is that the learning reports based on learning analytics, help them to engage and boosts their motivation. We know it is important to experience attention and appreciation to feel connected and to be able to put ones resources to good use.
The monthly learning reports provide an insight for school leaders into the quality of study programs, which they otherwise don´t have. The reports show how the students experience their learning outcome and learning path, the level of critical thinking amongst themselves and the teachers, and the amount of support from both teachers and peers. These factors reflect the alignment between the intended pedagogy and didactics and the actual performance in the study programs. The reports offer school leaders a tool for quality assessment and development, which should benefit the students and their learning outcome.

Conclusion

The main conclusion of our findings is that including students as partners in many parts of the online study programs model, and especially in the assessment model, seems to have boosted the students´ engagement, strengthened understanding of their own learning paths, and let them take greater responsibility for reaching their learning outcomes. We plan to present a more systematic evaluation of the effects of the changes on both students´ and our education institution´s performance.

When faced with the need to develop our online study programs, we were presented an opportunity to evaluate our own practice. We have experienced the strength in defining our pedagogical and didactical stance as an offset for creating alignment between learning outcome, teaching and learning activities and assessment. The online study program model, with its new model of assessment, provides a platform for further creating flexible and engaging education form for professional adult learners based on collaboration. We are eager to continue developing the model, especially as Education 4.0, [14] is emerging.

As the field of electro in Norway is engaging in the technological advances described as Industry 4.0, we are looking to include these in studies both on campus and online. The technologies in question are robotics, the internet of everything (IOE), artificial intelligence (AI), virtualization and big data and analytics. A group of researchers at higher vocational colleges in Denmark refers to this transition of education as Education 4.0 [14]. VTVC wishes to be a part of this educational transition.

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