Can Learning Be Organized?

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Abstract—The paper discusses the question “Can learning be organized?” in a systems theoretical framework. The paper shortly introduces two case studies as examples of students’ approaches, acts and reflections to the offered environment for learning. The preliminary question in both case studies is: What happens when students familiar with face-to-face-communication (f2f) forums as environment for learning have to participate in social systems, which are not only f2f-environments, but a mix of communication forums like Learning Management Systems, net-mediated conference forums, blogs, wikies, and pod-/vodcasts.

The research design is a mix of methods using observation, group and individual interviews, print outs of conference communication, and final written student-evaluations.

Index Terms—Learning, teaching, system and environment

I. INTRODUCTION

The purpose of this paper is to continue the discussion of the approach to the concept of “learning environment” and the premises for knowledge construction. Two case studies and a systems theoretical lens are presented here as an opportunity to discuss the question “Can learning be organized?”

The paper is seen as an invitation to continuing reflections and discussions concerning the concept of “learning environment” and its premises. As examples of the concept we can outline face-to-face (f2f) and net-mediated environments and various mixtures of these environments.

The chosen systems theoretical lens has consequences for the approach to the concept of teaching and learning, consequently to knowledge construction, which is seen as a result of learning processes.

The paper starts with an introduction to the chosen theoretical framework. Following that, two case studies will be presented and findings will be discussed in the introduced theoretical lens. Finally, the paper suggests an answer to the posed question “Can learning be organized?” and invites to further discussion about rethinking the concept of “learning environment” and its premises concerning mixture of f2f and net-mediated learning environments.

II. THEORETICAL FRAMEWORK

The theoretical framework is primarily inspired by the German sociologist and systems theorist N. Luhmann. This theory is a theory that sees social systems as systems of communication. Such social systems are characterized as being operationally closed, self-referential, and autonomous [1]. These systems' characteristics have consequences for the way we define learning, teaching and observe the potential nexus between learning and teaching. Being operationally closed and self-referential means that all operations are internal to the system and as such do not leave the system. It also means that the social system is self-governing, self-developing and self-reproducing [1] in an ongoing process, and that it uses the outcomes of its own operations as inputs for further reproduction. This does not indicate that a system is autarchic (self-sufficient); on the contrary, systems are dependent on their environments and thus their operations are self-governed and internal to the specific systems. To maintain themselves, systems need nourishment from the environment and systems need to be “disturbed” via their environment to maintain themselves. This need for disturbance is the pivotal point and fundamental basis for the discussion of the relation between teaching and the concept of “learning environment” and the question posed about the possibility of organizing learning.

Teaching is seen as a social event and conceptualizes the social as communication. The special form of communication pursuing changing psychic systems (mental constructions) is conceptualized as teaching. A psychic system is just one of many systems related to the complex system called an individual. Both social systems and psychic systems are, as mentioned above, operationally closed but can be structurally coupled via communication and a theme for the communication. If e.g. the students observe the communication in class or in a conference forum and furthermore participate with contributions, we have to do with a social system, the class, including the teacher.

This special form of communication is seen as a possible facilitator for learning processes and, with that, knowledge construction. But the nature or condition of the possible knowledge construction is not to be predicted much less to show, due to the abovementioned systems characteristics.

Systems theory is inspired by the distinction between trivial and non-trivial machines [2]. In this paper the concept machine is termed system inspired by Luhmann [3]. It leaves us with two types of systems: trivial systems and non-trivial systems.

Trivial systems can be understood in terms of input and output. In that respect they are analytically determinable, independent of previous operations and therefore predictable. Trivial systems can be analyzed in relation to cause and effects. These systems deal with rationality, thus causality. A trivial system is like a simple machine functioning predictable and thus the nexus between input and output is always given per se.

Non-trivial systems are characterized as the opposite, so to speak. Their operation is dependent on ongoing self-
reference and changing inner states. They are analytically undeterminable, unpredictable and dependent on previous operations and their concrete context.

A non-trivial system would e.g. be students and teachers, when the focus is on psychic systems operating in mental activities. Non trivial systems would be e.g. a class or a workplace or a company, if the focus is on social systems, which operate in communication. They are all regarded as unpredictable, and highly dependent on their concrete context.

Thus when we talk about the concept of learning – we will in this paper refer to individual mental constructions, which result in knowledge constructions. And we have to do with non-trivial systems. Shannon and Weaver’s [4] concept of communication as substance being transferred from one person to another, e.g. the idea that knowledge is a substance, which the teacher can transfer to the student, is not in line with the operation of non-trivial systems. Systems theory with its focus on non-trivial systems thus challenges the traditional paradigm that teachers can transfer knowledge to students through e.g. lecturing f2f or net-mediated. The metaphor of transfer cannot be used when the focus is on non-trivial systems. We never know the out-come of an input, like for instance a f2f-lecture or a podcasted lecture. Every system, students as well as teacher observes with its own capability and lens, consequently every system has its own unique way of observing and learning, hence construct knowledge.

Summing up this short presentation of systems’ key characteristics, we can talk about psychic and social systems as systems which are operationally closed, self-referential, autonomous, analytically indeterminable, unpredictable, depending on their previous operations and concrete context. As a result, we must reject the idea of trivial systems when we analyse students’ learning and approaches to the different social systems like f2f and net-mediated communication forums, offered in an educational setting. In other words every person, every psychic system observes its environment with its unique observation lens, hence every person constructs its unique environment.

III. THE CASE STUDIES

The following two cases are presented as examples of the students’ different approaches to the environment for learning and teachers intentions by choosing the specific environments.

A. Educational Framework

The first case presented deals with a three-month project, in which the students had to organize their project work themselves. The students chose to use different types of web-based communication forums, such as their own group conference in the offered conference system, messenger, mail, weblogs and chat. The teachers had organized the overall frame for the teaching environment. [5,6].

The second case deals with a six month semester, where the students’ project work was planned to be supported by different categories of pod- and vodcasts (categories including short instructions/demonstrations (5-7 minutes) and 45 minutes lectures (talking head)) among other mentioned net-mediated communication forums [7]. In both cases the project work was mentioned as teaching by the teacher, and the teachers had a variety of roles, from the well-known lecturer, supervisor and guidance counsellor to discussion partner.

In the first case the students were in their third year at university and in the second case the students were in their fourth year at university.

B. Research Design

Both case studies were based on a consecutive research design inspired by systems theory [8, 9]. The research projects made use of a variety of data collection methods, including observations, individual interviews (students and teachers respectively) and group interviews (students), print outs of the conference communication, questions asked in plenum sessions, and final written student evaluations [10, 11].

The research project’s focus on student approaches to a variety of communication forums including lectures (ordinary classroom interactions), problem-based self-organized group work, and web-based discussion forums and individual guidance. Furthermore, the research project included so called knowledge media like pod- and vodcasts, as a “one-way” and asynchronous media. In this, the students did not have the possibility to ask questions (written or oral) during the presentation of the video.

In both cases the observed courses were organized as problem-based project groups combined with lectures, so in both cases the teaching was organized as a mixture of ordinary classroom interactions and web-based communication.

C. Findings

Some of the students are comfortable with the complex environment of learning they are offered and other students prefer well-known environments with f2f interaction, being given homework to the next lecture and frequently receiving assignments and marks.

In the first case, the teachers observed that about half the students experienced the project process as worthwhile. The students used the net-mediated communication forums and were self-organized during all three months. Most of the groups asked for continuous meetings with one of the teachers in the role of guidance counsellor. The other half of the students were observed to have difficulties with the educational framework. They had difficulties organizing their group work, collaborating and cooperating during the group project process.

The students’ reactions can be categorized into two groups. One group observed that they had developed and improved their academic and social qualifications through their use of a variety of communication forums and through the demands of the self-organized activities required by the project. They stated that in the future they would prefer to participate in courses organized as a variety of communication forums and with use of different kinds of knowledge media. They found that each of them have their own advantages. The other group preferred traditional f2f class interaction with its more or less well-known teacher expectations. This group of students preferred having a semester timetable and being informed
by the teacher of the next homework schedules and assignments/marks. The teachers’ intention by organizing the teaching environments as at variety of communication forums and knowledge media was – besides the academic aims - to prepare each student to the complexity of the society. The purpose was via the work in a more complex environment to challenge the students to cope with complexity. The teachers’ point of departure was that the student has to learn that complexity of the society is a premise and therefore students need qualifications, which matches the complexity of society. The teachers had informed the students about the background and the intentions. About half the students did not work as intended by the teachers.

The abovementioned students’ approaches to the educational framework, thus settings for teaching, were alike in the second case. In this the students’ use of and reflections on weblogs, pod- and vodcasts were particularly in focus. The students again divided into two groups. One sub-group preferred the face-to face communication in class, including the well-known expectation to them as students and their expectation to the teacher.

A few of the students used the weblogs frequently. Most of the students did not use the weblogs more than a few times.

When the focus was on pod- and vodcasts, most of the students wanted the possibility to interrupt “in real time” and ask questions, which emerged during the teacher’s lecture/demonstration/instruction. The other part of the students thought it was a flexible way of “being a student.” The time and place dimension was in focus in their argumentations. Some of the students in this group stated that they had a more or less indolent approach to their studies, and the available pod- and vodcasts became a very comfortable way of being updated and for preparing for the exam. Other students in this group found that the pod- and vodcasts were a comfortable way of preparing for the specific lesson.

Both groups found that the possibilities of replaying the pod- and vodcast was an advantage and saved them from asking the teacher some of the questions they had. Nearly all students thought the podcast category “talking head” was a waste of time during the semester; however, nearly all the students recognized this specific podcast category as an option when they prepared for the exam. But the intention from the teachers’ point of view, which was to unfold the possibilities for communication in the offered communication forums, was not “in front” in the students’ approaches.

They assumed that if they could reproduce the “talking head,” they would be more successful in the exam. They actualize a well-known horizon of expectations and not the intentions created by the teachers in the two case studies.

D. Findings - a summary

The teachers’ intention by the designed environment for learning, the – teaching environment – is not per se obliged by the students. In other words focusing on the theme of the paper, the two cases show that a teacher can organize teaching environments, f2f as well as net-mediated communication forums, intending to facilitate the students’ learning processes, but the teacher cannot organize learning.

If we use the introduced system theoretical lens we can say that teaching - seen as a highly specialized form of communication intended to facilitate learning, hence offer nutrition to students’ knowledge construction - gives no imminent guarantee for the students’ approaches to the specific teaching environment and their learning outcome. Every person, every system, is an autonomous and a self-referential system, consequently every persons’ observations is related to this person, the psychic system, operating in mental activities.

With the theoretical framework used in this paper, the concept of teaching environment is more precise than the concept of “learning environment” because communication is regarded as the “disturbing activity”, for the psychic system, e.g. a student. Teaching environments are seen as communication forums, as social systems which intend to bring about change concerning students’ ongoing knowledge construction.

This is an important point to recall when selecting the actual teaching. The specific communication forum with its special premises plays an important role when it comes to its possibility to maintain itself. In other words, if the communication is fruitful, ongoing, and is focused on the theme in the concrete context, it can be seen as a possible way of facilitating learning and thereby knowledge construction. This applies to the f2f context as well as to the many net-mediated communication forums. But as the case studies show, and the theoretical framework unfolds, it is not possible to organize systems’ learning, nor systems’ communication. What for instance the students select to focus on and choose to actualize in the concrete learning situation is not possible to predict the outcome of.

IV. CONCLUSION AND AN INVITATION

The familiar “one-size-fits all” approach [12] is so to speak too naive and must, according to the introduced system theoretical lens, be challenged with the approach of non-trivial systems.

We are not dealing with trivial systems, even if a non-trivial system, e.g. a student or a teacher managed to act as a trivial system in the specific context, where the person finds it appropriate to act like a trivial system. Like for instance in class or in a workplace, where there is certain expectations to the students’ or the staffers’ behavior.

In principle, cf. presented system theoretical framework, we never know the learning outcome of a concrete context. Thus it requires that we accept the immanent complexity in every learning and teaching context.

The teachers have their intentions concerning the organisation of the teaching environment, but the students, observed as persons and a unique psychic system, operating in the mode of consciousness, has their observation and interpretation. It deals with both students’ observations and approaches to the very organization of the semester, the teaching environment, and the specific learning outcome concerning the individual student.
Thus, the posed question: “Can learning be organized?” must with the systems theory chosen be answered with a no.

This short answer is an invitation to a continued discussion about rethinking the concept of “learning environment” and its premises concerning mixture of f2f and net-mediated teaching environments as environment for learning.

REFERENCES


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