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PROCESSOS DE APRENDIZAGEM DOS ESTUDANTES PARA UMA APRENDIZAGEM SUSTENTÁVEL

STUDENT'S LEARNING PROCESSES FOR SUSTAINABLE KNOWLEDGE

PROCESOS DE APRENDIZAJE DEL ESTUDIANTE PARA CONOCIMIENTOS SOSTENIBLES

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RESUMO

Introdução: O conceito de sustentabilidade tornou-se num dos mais utilizados e controversos de hoje. Portanto, é importante desenvolver atividades em todos os contextos educacionais, a fim de aumentar a compreensão dos objetivos para uma prática mais sustentável. Isso também significa que os próprios professores devem assumir mais responsabilidade pelas suas atribuições, interpretar e entender o conteúdo do conceito de sustentabilidade e a exigência de novos cursos. Eles precisam, sem dúvida e naturalmente, novos métodos e ferramentas. Tradicionalmente, os professores planeiam individualmente as suas aulas, avaliações e diferentes tarefas. De forma gradual, isso está a mudar devido às abordagens de sustentabilidade. Hoje, existe a necessidade de práticas coletivas de aprendizagem, não só entre os estudantes, mas também entre os próprios professores ao nível do ensino universitário.

Objetivo: Identificar como os alunos estão a usar o design da unidade para criar conhecimento sobre Desenvolvimento de Negócios Sustentáveis, dentro da divisão de Tecnologia de Qualidade do Departamento de Ciências da Engenharia da Universidade de Uppsala.

Métodos: Este artigo analisa uma unidade curricular denominada Desenvolvimento de Negócios Sustentáveis, na Universidade de Uppsala, no 2º semestre de 2017. A unidade curricular incluiu exercícios teóricos e práticos. Neste estudo foram aplicados métodos de pesquisa qualitativos e quantitativos e usadas como fontes empíricas entrevistas, observações e discussões de focus group com estudantes e documentação da unidade curricular.

Resultados: Os estudantes aprenderam através de processos de aprendizagem individuais e coletivos. Estudos de literatura, sequências de aprendizagem, organizadas individualmente, deram-lhes a compreensão e as ferramentas para uma maior aprendizagem. As discussões em grupo clarificaram e aprofundaram a compreensão do conceito de sustentabilidade. Os alunos perceberam que todo o processo de aprendizagem se tornou mais fácil de gerir através da aprendizagem coletiva. Investigação mostra que é necessário equilibrar esses dois processos de aprendizagem para maximizar a aprendizagem dos alunos. Os processos de aprendizagem coletiva parecem mesmo apoiar alunos de baixa performance.

Conclusões: Os resultados mostram que as organizações educacionais têm grande necessidade de criar ferramentas e organizar estruturas e dar espaço e tempo para esse tipo combinado de aprendizagem para todos os alunos. Aprendizagem na sua globalidade e não apenas para o conceito e questões relacionadas com a sustentabilidade.

Palavras-Chave: aprendizagem individual e coletiva (colaborativa); sustentabilidade; processos; ensino universitário

ABSTRACT

Introduction: The concept of sustainability has become one of today's most widely used and controversial concepts. It is therefore important to develop activities within all educational contexts in order to increase understanding of the goals for more sustainable practice. This also means that professors themselves must take more responsibility for their assignments, interpret and understand the content of the concept of sustainability and demands for new courses. They need, doubtlessly and naturally, new methods and tools. Traditionally professors plan their lessons, different tasks and how they are to be assessed, entirely themselves. This is now slowly changing not least due sustainability approaches. Today there is demand for more collective learning practices, not only among students, but also among university professors themselves.

Objective: This paper aims to study how some students are using the course design to create knowledge on Sustainable Business Development, within the division of Quality Technology of the Department of Engineering Sciences at Uppsala University.

Methods: This paper studies Sustainable Business Development a course at Uppsala University in spring 2017, included both theoretical and practical exercises. In this study it was used qualitative and quantitative approaches, inquires, observations, focus group discussions interviews with students as well as documentation over the course design were used as empirical sources.

Results: Students learned through both individual and collective learning processes. Literature studies, scalable learning sequences, organized individually, gave them pre-under- standing and the tools for further knowledge. The discussions in groups clarified and deepened they understanding of sustainability. They experienced that the whole process of learning got easier to manage by collective learning. Research shows that there is a need for balancing these two learning processes to maximize students' learning. The processes of collective learning seem to even support low performing students.

Conclusions: The results show that educational organizations are in great need of creating tools and arrange structures and give space and time for this combined type of learning for all students. This to create understanding for the issues students are learning in general and not at least on issues of sustainability.

Keywords: Individual and collective (collaborative) learning; Sustainability; Processes; University course

RESUMEN

Introducción: El concepto de sostenibilidad se ha convertido en uno de los más utilizados y controvertidos de hoy. En cualquier caso, es importante desarrollar actividades dentro de todos los contextos educativos con el fin de aumentar la comprensión de los objetivos de una práctica más sostenible. Esto también significa que los propios profesores deben asumir más responsabilidad por sus tareas, interpretar y comprender el contenido del concepto de sostenibilidad y las demandas de nuevos cursos. Necesitan, sin duda y naturalmente, nuevos métodos y herramientas. Tradicionalmente los profesores planifican sus lecciones, las diferentes tareas y cómo deben ser evaluadas, ellos mismos de principio a fin. Esto ahora está cambiando lentamente sobre todo debido a los enfoques de sostenibilidad. Hoy en día existe una demanda de prácticas de aprendizaje colectivo, no sólo entre los estudiantes, sino también entre los propios profesores universitarios.

Objetivo: Identificar cómo algunos estudiantes están utilizando el diseño del curso para crear conocimiento sobre Desarrollo de Negocios Sostenibles, dentro de la división de Tecnología de Calidad del Departamento de Ciencias de la Ingeniería de la Universidad de Uppsala.

Métodos: Este trabajo estudia una asignatura universitaria denominada Desarrollo de Negocios Sostenibles en la Universidad de Uppsala en la primavera de 2017. La asignatura incluyó ejercicios teóricos y prácticos. En este estudio, se aplicaron métodos de investigación cualitativos y cuantitativos y se utilizaron como fuentes empíricas investigaciones, observaciones, entrevistas de grupos de discusión con estudiantes, así como documentación sobre el diseño del curso.

Resultados: Los estudiantes aprendieron a través de procesos de aprendizaje individuales y colectivos. Los estudios de literatura, secuencias de aprendizaje escalables, organizadas individualmente, les dieron pre-comprensión y las herramientas para un mayor conocimiento. Las discusiones en grupos aclararon y profundizaron su comprensión de la sostenibilidad. Ellos experimentaron que todo el proceso de aprendizaje se hizo más fácil de manejar mediante el aprendizaje colectivo. La investigación muestra que hay una necesidad de equilibrar estos dos procesos de aprendizaje para maximizar el aprendizaje de los estudiantes. Los procesos de aprendizaje colectivo parecen incluso apoyar a los estudiantes de bajo rendimiento.

Conclusiones: Los resultados muestran que las organizaciones educativas tienen una gran necesidad de crear herramientas y organizar estructuras, así como dar espacio y tiempo para este tipo combinado de aprendizaje para todos los estudiantes. Esto para crear comprensión para las cuestiones que los estudiantes están aprendiendo en general y no solamente en temas de sostenibilidad.

Palabras Clave: aprendizaje individual y colectivo (colaborativo), sostenibilidad, procesos, curso universitario

INTRODUCTION

According to The United Nations Educational, Scientific and Cultural Organization (UNESCO, 1998), the mission of higher education is to educate, train, and undertake of society as whole. However, there exists no single sustainability formula for higher education that fits all countries because of the crucial processes that take place in varying historical, social, economic, political and cultural contexts (Ulrich & Kearney, 2009). An opportunity for one country could be a challenge or risk of another in spite of globalization (UNESCO, 2004). Understanding the concept of Education for Sustainability (EDS), has been one of the major challenges for educators during the last decade due to the debate over the different meanings associated with sustainable development (Jickling, 2006). Sustainable development and sustainability are terms often used interchangeably, but they are not interchangeable. Yet, there is controversy about what the ultimate goal must be and what the means for reaching that goal are. Some claim that sustainable development is the mean to reach sustainability (Lozano, 2008); but others define sustainability as any process that may ultimately lead to sustainable development (Leal Filho, 2000). The term education for sustainable development was preceded by the term environmental education; traditionally, this focuses on coping with nature's issues related to the environment, natural resources, ecosystems, and so on. Nevertheless, during the past years, environmental education has shifted to understanding the significance of sustainable development (Markaki, 2014). The implications of this shift have been discussed in literature (Kopnina, 2012).

Mainly, EDS considers not only aspects of environmental sustainability but also social and economic aspects; this is often called the triple-bottom-line approach (Hacking & Guthie, 2008). The concept of education for sustainable development calls for the transition from professional environmental training to an economically and socially focused model of education based on interdisciplinary knowledge and a complex approach to the development of society, economy and environment (Kasimov, Malkhazova, & Romanova, 2005).

In December 2002, the United Nations General Assembly adopted a resolution, which looked at the period 2005–2014 as the United Nations Decade of Education for Sustainable Development. This promoted the vision of a more sustainable and just global community through different forms of education, public awareness, and activities to be achieved by integrating values, activities, and principles inherently linked to sustainable development into all forms of education, in hopes of ensuring a more sustainable future in social, environmental, and economic terms by helping people change attitudes, behaviours, and values. (UNESCO, 2007). If the world wants to advance on its path toward sustainable development, much more emphasis than before to be placed on ESD was highlighted (Haan et al. 2010).

Different countries across the globe have responded differently to the call to organizing sustainable education (Pigozzi 2010). Higher education institutions are no exceptions. They have endorsed the principles of sustainable education in their teaching and research. This is further aiming to help society and it's organisations to make the transition towards sustainability (Velazquez et al. 2006; Wals 2014).

Curriculum changes have been one of the main efforts to operationalize sustainability at universities. (Ally & Samaka, 2013). At Uppsala University the Chancellor's Office had a government mission to carry out an evaluation of university work to promote sustainable development under the Higher Education Act (1992: 1434). Evaluation is carried out as a thematic evaluation and focused on education for sustainable development (UFV 2016/933). Uppsala University, like other institutions of higher education in Sweden, has been asked to describe, through self-assessment, its work to integrate issues related to sustainable development in its education. There are university-wide goals set for sustainable development in education at Uppsala University. These goals cover all levels of education (basic level and, if applicable, advanced level and research level) and are anchored within the university. The university is actively working to ensure the educational and research-based skills of relevant staff in issues related to sustainable development in education. Uppsala University has courses designed and implemented to integrate sustainable development. This can refer to both content and working methods. At the university there are institutions, program administrators or equivalent that work systematically to follow up and develop the integration of issues related to sustainable development in education. At the university there are also courses where research for sustainable development is used in education. Professors at the university have to create methods and tools to integrate sustainability issues in their courses (UFV 2016/933). This can be experienced as a big challenge for the professors. These designs may also be a challenge for their students. This paper aims to study how some students are using the course design to create knowledge on Sustainable Business Development, within the division of Quality Technology of the Department of Engineering Sciences at Uppsala University.

1. THEORETICAL FRAMEWORK

1.1 Learning

Learning, as a concept, has been looked at from various disciplines and perspectives during history. As a result, the concept of learning is used to cover "a wide society of ideas" (Minsky 1988, p. 120). In this paper there is no attempt to give a full overview of the results of conceptual richness of learning (for an overview, see e.g. Lundgren, Säljö & Liberg, 2014). Instead, attention is given to theories that can bear relevance to the perspective on learning sustainability. Especially interesting are those perspectives that address joint processes of learning that take place in formal educational settings. But there is also a need of combining joint learning processes with the individual learning processes.

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1.1.1 The learning individual

Theories of individual learning are crucial for understanding organizational learning. Psychologists and educators have studied individual learning for decades, but they are still far from fully understanding the workings of the human mind. Likewise, the theory of organizational learning is still in its embryonic stage (Lewin, 1997). The importance of individual learning for organizational learning is at once obvious and subtle - obvious because all organizations are composed of individuals; subtle because organizations can learn independent of any specific individual but not independent of all individuals. Psychologists, linguists, educators, and others have researched the topic of learning at the individual level. They have made discoveries about cognitive limitations as well as the seemingly infinite capacity of the human mind to learn new things. Piaget's focus on the cognitive-development processes of children and Lewin's work on action research and laboratory training have provided much insight into how we learn as individuals and in groups. Some of these theories are based on stimulus-response behaviourism. Some focus on cognitive capabilities and others on psychodynamic theory (Piaget, 1970; Lewin, 1997). Numerous other theories have been proposed, debated, and tested, such as Pavlov's classical conditioning, Skinner's operant conditioning, Tolman's sign learning, Gestalt theory, and Freud's psychodynamics (Lundgren, Säljö & Liberg, 2014).

It seems as though, that the more knowledge we gain on learning processes, the more we realize how little we know. A number of theorists make connection between thought and action, according to Schein (1993). Argyris and Schön (1978) argue that learning takes place only when new knowledge is translated into different behaviour that is replicable. For Piaget (1970), the key to learning lies in the mutual interaction of accommodation (adapting our mental concepts based on our experience in the world) and assimilation (integrating our experience into existing mental concepts). Kolb (1984) states that: "*Learning is the process whereby knowledge is created through the transformation of experience*." This means what people learn and how they understand and apply that learning. For example, a student who has not understood the theory cannot use it as a tool in analysing the phenomenon. Learning can then be defined as increasing one's capacity to take effective action.

In theories about learning that focus on the individual, the importance of concrete experience is often emphasised. Kolb (1984) developed a model of the 'learning cycle'. According to Kolb, an individual must go through the following stages in order to learn: experiencing, reflecting, conceptualizing, deciding, and acting. Concrete experiences of actions start the learning process. After that the individual observes the effects of his or her actions and reflects on these. Then the relation between action and effect is conceptualized and generalised into theoretical terms. At last s/he tests the theory by acting accordingly in a subsequent situation. Not all kinds of experiences lead to learning; learning occurs mainly when there are conflicts between expectations and experiences or between ideas and desires. Kolb's theory offers a concrete framework for developing activities within evolving networks for the different phases of the learning process.

This theory on learning is interesting from the perspective of learning of sustainability because it focuses explicitly on the relationship between cognition and action, rather than on the increase of an individual's stock of knowledge. Kolb's theory has though limitations. The focus in the theory is on learning from and through (primarily) individual experience. The theory does not take into consideration the contextual aspect, i.e., how some learning is influenced by social settings. It also overlooks the role of values and interests that influence human action. In the pursuit of learning sustainability, it is important to take both these issues into consideration (Kolb, 1984).

Schön (1995) is an author who integrates values and beliefs in a theory on learning. According to Schön cognition cannot be separated from values and beliefs, nor can cognition and action. Importance of by illuminating the relationship between learning and action, that is, between thinking and doing by Schön (1995) sheds light on the nature of the changes that an innovative project must seek to provoke. Changes in so called theories-in-use that often are tacit, remain implicit and go unnoticed. In order to challenge them, they need to be brought to the surface: people will have to be made aware of their tacit rationalities, and be tempted to reconsider them. A second relevant aspect of Schön's insights is that, even though theories-in-use play a role in the actions of various actors in a similar way, they differ in terms of contents depending on professional training and experience, social background, up-bringing and so on. Because of their intrinsic and fundamental divergence, the theories-in-use that people from different professional and cultural backgrounds hold, will influence the possibility for them to learn collectively, a topic which is to be discussed next.

1.1.2 Collective learning

Organizational learning is more complex and dynamic than a mere magnification of individual learning. The level of complexity increases tremendously in the change from a single individual to a large collection of diverse individuals. Issues of motivation and reward, for instance, which are an integral part of human learning, become doubly complicated within organizations. Although the meaning of the term "learning" remains essentially the same as in the individual case, the learning process is fundamentally different at the organizational level. A model of organizational learning has to resolve the dilemma of imparting intelligence and learning capabilities to a nonhuman entity without anthropomorphizing it. What do we mean by organizational learning? In the early stages of an organization's existence, organizational learning is often synonymous with individual learning because the organization consists of a small group of people and has minimal structure (Ohlsson, 2004).

As an organization grows, however, a distinction between individual and organizational learning emerges, and a system for

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capturing the learning of its individual members evolves. Argyris and Schön (1978) posed one of the main dilemmas shared by all who tackle this issue: There is something paradoxical here. Organizations are not merely collections of individuals, yet there are no organizations without such collections. Similarly, organizational learning is not merely individual learning, yet organizations learn only through the experience and actions of individuals.

Collective, collaborative and collegial learning are terms often used in the context of joint learning processes. Ohlsson (2008) describes learning as a social process when the individual change her/his way of thinking about something. Collaborative learning in turn can be considered as a form of joint learning, as a special type of phenomenon, where the starting point is that all learning is based in social activities, but with the collaborative learning processes is meant something beyond the social. Collaborative learning is a situation in which at least two people learn something together (Bruffee, 1993; Dillenbourg, 1999). Collaborative learning activities can include collaborative writing, group projects, joint problem solving, debates, study teams, and other activities. The approach is closely related to cooperative learning, which is the instructional use of small groups so that individuals work together to maximize their own and each other's learning, (Johnson et al., 2008). The difference between collaborative and collective learning is still vague. But according to Granberg and Ohlsson (2016) can this difference consist of that in collaborative learning there is group of individuals trying to learn something together but without to specify or clarify the social context. In collective learning however it is decisive to try to achieve a common understanding.

Collegial learning however, is often used in when discussed schools and professors, is related to the concept of collaborative learning. Collegial learning can be seen as a combination term for various forms of professional development where colleagues through structured cooperation acquire knowledge from a broad concept of knowledge, which also contains abilities and skills. In general, it´s emphasized that peer learning or collegial learning is a method by which a more experienced person helps a less experienced to absorb specific knowledge. Useful methods for peer learning are among others, learning study, lesson study and auscultation with feedback and peer tutoring (Granberg & Ohlsson, 2016).

The importance of the joint learning synergistic effect is often highlighted in the descriptions of the collective learning (Döös & Wilhelmson, 2011). Synergy means that collective processes based on interaction and communication, leads to the new common beliefs that had not been possible for individuals to come up with on their own (Granberg, 1996; Ohlsson, 1996; Wilhelmson, 1998).

Wilhelmson (1998) also draws attention to the importance of symmetry between the participants in a dialogue. Symmetry means that all participants' observations and opinions are given the same weight in the conversation, and to recognize each other experiences as valid. An asymmetric situation means a situation where power positions and opinions consolidation and an evaluative approach prevent an open and common search for new opportunities.

Symmetrical relationships can thus be seen as favourable to collective learning. Habermas (1996) argues that inter-subjective founded collective agreement will not occur from the fact that someone has been manipulated or forced to a particular approach, but requires certain symmetry between the participants.

Ohlsson (1996) has developed the concept of collective learning and created a model of the relationship between individual and collaborative learning, which can be used to illustrate the collective learning. Ohlsson (1996) notes, that the collective learning shapes how the individual perceive their practical work and thereby shape the collective learning individual experience potential. It is important for the collective learning that the experiences described in the collective so that the community can jointly problematize and reflect on the experience (Dixon, 1994; Granberg, 1996; Ohlsson, 1996; Wilhelmson, 1998; Larsson, 2004).

Ohlsson (1996) points out the learning dynamic character and the on-going co-constructing of borders for example, the permissible and the impermissible, is something, which can be perceived as a condition for learning processes. There is a critical, emancipatory dimension of awareness rising of these unconscious conditions for learning. If the individual is unaware of its potential and limitations, the individual cannot respond fully to promote learning.

Any planned, directed change by individuals or collectives is built on learning. Learning can be defined more generally as the process of acquiring knowledge, skills, norms, values, or understanding through experience, imitation, observation, modelling, practice, or study; by being taught; or as a result of collaboration. Prerequisites, according to Dixon (1994); Müllern and Östergren (1995) for collective learning are: the organization and the group should have a structure which promotes learning; interaction, communication and reflection skills are needed; it is important to create a organizational/group culture with openness to change; working methods and ways to inform and communicate with each other are of importance. Collective learning has a dynamic character. The process for collective learning includes awareness of the level of complexity collective learning in organizations/groups compared with learning as an individual process. Awareness of that learning can be a social process when the individuals change their way of thinking about something is essential.

Collective learning in organizational context requires certain symmetry between the participants. Furthermore, Illeris (2007) emphasizes that for successful collective learning it is important that the group or team must be included in a common situation. Participants should have roughly the same opportunities to learn. The learning situation should be of such a character (emotional and jointly) so that it mobilizes the mental energy required to get at a position of substantially learning. It is necessary with synergy, based on interaction and communication, which generate new common beliefs (Dixon, 1994; Müllern &

Östergren 199). It is also important that the experiences are described in the collective so that the community can jointly problematize and reflect on the experiences. Additionally, awareness of that the collective learning shapes how the individuals perceive their practical work is important and thereby shapes individual experience potential. The on-going co-construction of permissible and impermissible borders is elementary in the process. Furthermore, it is decisive to achieve a common understanding.

It is also significant, according to (Granberg & Ohlsson, 2016) to develop action strategies for how the collective knowledge can be used to create collective expertise.

1.1.3 Learning sustainability

Education *about* sustainability is a term referring to declarative knowledge sets associated with sustainability. Declarative knowledge focuses on the facts and steps of processes, the ¨what of knowledge (Taylor, 1999, p. 2). Education *for* sustainability however relates to procedural knowledge. Procedural knowledge moves beyond declarative knowledge to enactment and application - the "how" (Taylor, 1999, p. 2) and "why" uses of knowledge. Distinctions between "about" and "for" are mirrored in sustainability competencies (Barth, 2013; Sipos et al., 2008) and corporate social responsibility literature (Hesselbarth & Schaltegger, 2014). Across this literature, Brundiers and Wick (2010, p. 310) identify three core sustainability competency sets: *a strategic* knowledge cluster; *practical* knowledge cluster and a *collaborative* cluster. The strategic knowledge cluster involves applying declarative and procedural knowledge to assess, analyse, create and develop strategies for sustainable futures. The practical knowledge cluster associates with transferring knowledge into experiential practice (Brundiers & Wick, 2010).

To summarize the discussion of learning above, it can be stated that learning is valued by incorporating both individual and collective learning processes. Sustainability competencies by Brundiers and Wick (2010), and collective learning are compatible. Collective learning can then be seen as a tool and arena for the acquisition of these skills.

2. METHODS

The course of Sustainable Business Development was given at Uppsala University, campus Gotland within Department of Engineering, division of Quality Technology, in spring semester 2017. The goal of the course was to establish a sustainability report for an organization according to the Global Reporting Initiative (GRI) guidelines. Students were supposed to learn to analyse and critically assess a sustainability report based on the UN's sustainability goals, the Swedish national environmental objectives and ISO 26000 standards; to integrate principles, working methods and quality development tools with overall systems for sustainable business development; to discuss and reflect on how the working methods presented in the course can develop and help technology-intensive companies and organizations in their work on sustainability issues. The course was given on campus. A total of 24 students participated, of whom all completed the course. The course was also offered parallel as a distance course but this study only applies to the students who studied on the campus.

2.1 The design of the course

According the professor, course leader and the written course introductions the overall aim of the course was to get an overview of sustainable industrial Business development based on synergies between sustainable development and quality. The course was designed by using short lectures and one day long guest lecture, sequences of scalable learning which was used as preparation for seminars, seven half day seminars, team work and student presentations. Active participation and oral presentations were required for approval at the seminars. The course had two larger written tasks that were graded.

2.2 Research method and design

Inquiries, observations and focus group discussion and interviews with students were performed and used as empirical sources. Access to different course documents and the course e-classroom was also provided. The Uppsala University learning platform (Moodle) was interactive digital platform where the course design and the documents, different links etc. were presented and where communication with the students took place continuously with the course leader. The research design consists of an documentary studies, an introductory survey to the 15 students who wanted to participate in the study, observation of the group work, focus group interview and the final inquiry. The researcher also had possibility to take part of the student evaluation of the course as well as course leaders evaluation report of the same. The results of these data are presented and analysed by using the theoretical findings on learning processes.

3. RESULTS

Using the data from survey, focus group interviews and observations, it was possible to conclude the according the students, the course of Sustainable Business Development and it's structure and design has not been fully promoting their learning. They are telling that they are used to work in different groups during their education. They found that their skills for communication, interaction and reflection has been sharpen and has developed increasingly. The skills for working together have also been improved through the years they have been studying at the university. Students are also aware of the complexity of learning in groups compared studying individually. However, learning in a group is perceived as more rewarding in the long run. It provides broader knowledge when you can share the experiences of others. The students also state that they can change their positions during group discussions because they are open to the opinions of others. According to students, there is a need of some symmetry between participants in the group, but at the same time the groups cannot be too homogeneous. This course, however, was including students from two different programs. This was experienced by many as problematic and something that threatened group dynamics.

Working in groups gives more opportunities for solving the problems, according to students. During group work, students like to treat the problems at a practical level. They can then achieve a common understanding in the group. Students were critical of the course design. Course design did not meet their expectations. They claim to have not received practical applications in and about sustainability. Many are explaining that all they have learned is to write a sustainability report. They prefer not only read the course books themselves because it often only gives one perspective of the problem. It would be better to read several articles in order to exploring several perspectives. Also, more lecturing by course leader could have helped the students to get more common understanding of the subject, they stated.

From the student's statements it appears that, as the course was designed, students did not have time enough for group discussions. Their learning process also became too fragmented due many changes in course design, structure and tasks during the course.

In general, almost all students (15 in total) experience group work as something positive. They often use social media in order to create communication with each others, they create rules for interaction when starting their group activities. They set up a group contract in the beginning of the course about working methods, division of tasks, roles etc. They sometimes practice rolling presidency, sometimes choose a leader for the group.

Someone always takes the leader role, it's never a problem in our courses.

But with some other courses they have studied with, where all the students came from different faculties, not yet knowing each others, to become a leader wasn't as attractive. This led to a more fragmented responsibility in the group. As new students in the program, they exercised the strict principle of justice in performing all tasks. Everyone would do everything and equally. Later on, they have understood that it is better to let people do what they are good at instead of forcing them to do everything. The group's work doing so becomes more efficient and fun for everyone.

Today we are more permissive, we like our differences, and it's ok to do what you are good at.

Informal leaders did not exist during the group work in this course. The time for creating these structures at the seminars was too short. Persons who were not taking their responsibility during the work were pressed to do so by the group. Students did even show understanding for differences by declaring that:

Everyone does not have a skill of seeing what needs to do.

One has to think of the other person - how do they think?

There are individuals that the group has saved.

The group's cohesion may have to go first?

These kinds of statements show the maturity of the group in working and learning collectively. They have learnt and understood that diversity in the group can be developing and that the benefits of the group is to be preferred in order to get work done. At the same time does the group take responsibility for all individuals or members of the group. Students are talking about balancing between permissible and impermissible borders in their group working processes. If individual, a group member doesn't pull his load; he does get a reminder of others of a need of doing so. If this doesn't help either, the group presser increases and the member needs to explain the reasons of not contributing to the whole group. This usually is enough to get the person in line with the group. Students are claiming that there is a clear difference between the program and single course group behaviour. When you are able to work longer period of time together it's sharpening the group dynamics. They also state that there is a need to restructure the group in between, to form new installations, to introduce new members or to break the roles of the group.

This is important for avoiding so called groupthink where the group desires for harmony or conformity and when this then is resulting an irrational or dysfunctional decision-making outcome. Group members try to minimize conflict and reach a consensus decision without critical evaluation of alternative viewpoints by actively suppressing dissenting viewpoints, and by isolating themselves from outside influences. But all in all, these things are depended of the actual working tasks.

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CONCLUSIONS

The study shows that for learning outcomes about and for sustainability within the university course, there is a need of both individual and collective learning processes. In order to successfully acquire knowledge about and for sustainability, it is first and foremost necessary that the task is clearly formulated and adapted to the target group. There must be a balance between individual and collective learning processes in order to better utilize synergy effects in learning. In addition, the structure of the course needs to be built up with varying moments where different methods and practices are shifted with each other. If group work moments, through collective learning are used, enough time should be assigned to the tasks to create group dynamic gains. There is also a need to change groupings frequently to avoid so-called, group think. At the same time, it is important not to replace groups too often and to be careful about their composition. It is expressed by several students that the merging of two different program students in this course caused concerns at several of the students. There is a need for balancing the group's composition, not least on the basis of the task. Furthermore, the course was planned to contain both theoretical and practical parts of the subject being studied. In order to be able to create a deeper understanding of the subject, it is necessary to highlight several and even critical perspectives for the students. Learning sustainable business development requires understanding the responsibilities embedded in the assignment, both for the professors who design and teach the course but also for the students that will learn the content of the course. It seems to be the collective learning processes that help the students to understand their responsibilities towards sustainability. Further work is needed for a better understanding of the role of both individual and organizational learning for sustainable competencies. We are in need of knowing what kind of types of mental models that are favourable, which models are appropriate for representing dynamic complexity of learning sustainability; we need methods with which we can capture the understanding of such complexity as well as means through which new learning for sustainability can be transferred to the whole learning organization. The task for educators and collective learning agents is to facilitate participative and systemic critical learning systems and situations where these conditions can be realised.

Research Limitations: The major implication of the study is that it includes only one course and one subject.

Originality/Value of paper: The study makes a contribution to the knowledge about learning processes at the university.

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