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Johan Gärdebo and Mattias Wiggberg (Eds.)

Students, the university's unspent resource

Revolutionising higher education through active student participation

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PEDAGOGICAL DEVELOPMENT

Students, the university´s unspent resource

- Revolutionising higher education through active student participation

JOHAN GÄRDEBO AND MATTIAS WIGGBERG (EDS.)

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Editors: Johan Gärdebo and Mattias Wiggberg
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Preface

> What I hear I forget,
> what I see I remember,
> what I do I understand.

There is some dispute regarding the origin of the old Chinese proverb. Was it phrased by Confucius himself or rather by Xunzi (340-245 BC), one of the great Confucian scholars of the early years? Leaving that dispute aside, the fuller and more literal English translation of the Chinese sentence reads:

> Not hearing is not as good as hearing, hearing is not as good as seeing, seeing is not as good as mentally knowing, mentally knowing is not as good as acting; true learning continues up to the point that action comes forth (or, only when a thing produces action can it be said to have been truly learned).

Whether in the shorter or longer version, this old Chinese saying can be read as a call for active student participation. In order to learn, students should not only listen to lectures, read literature or see experiments being performed. They should be constantly active and do things: solve problems, make experiments, analyse data of various sorts, write, present and discuss. And the more they do this together, the better the learning outcome.

As an internationally oriented research establishment, Uppsala University aims to undertake research and education of the highest quality and to offer study environments where students can develop into knowledgeable, critically thinking, creative and responsible individuals. Active student participation in the broadest sense is a cornerstone of the university's strategy for quality enhancement.

As defined in this volume, active student participation specifically refers to students taking an active role for other students' learning – as mentors, tutors or supplementary instructors. Such initiatives have attracted increased interest in recent years.

Once you think about it, it is obvious that initiatives of this kind offer opportunities for numerous gains. Not only is it a way of increasing educational quality at relatively low cost. It gives the students who get peer assistance chances to improve their study results, while at the same time those students who give peer assistance learn a considerable amount. In line with the Chinese saying cited above, many have experienced that the ultimate way of learning a subject is actually to teach it!

This volume is important and interesting in several ways. First, in terms of the contents that it provides: rich examples and deep reflection on various aspects of active student participation. Secondly, it is noteworthy that the volume in itself is the result of a process initiated and managed by active students. We extend our appreciation and sincere thanks to the editors of the volume, Johan Gärdebo and Mattias Wiggberg, who were also instrumental in organising the seminar series that it builds upon.

Eva Åkesson
Vice Chancellor
Uppsala University

Anders Malmberg
Pro Vice Chancellor
Uppsala University

Uppsala,
September 2012

Content

III. EXPERIENCES FROM IMPLEMENTATION

IV. LEADERSHIP AND PROFESSIONAL LIFE

V. VISIONS FOR THE FUTURE

Importance of student participation in future academia

- Editor's introduction

Johan Gärdebo, MA candidate and
Mattias Wiggberg, PhD

The last decade's academia has undertaken several important changes. From being a matter for the selected few, it's now of major importance for society in terms of educating a skilled workforce. As an effect of this shift, a change of education has been requested from several directions, even referred to as a need for 'revolutions' within the academy (Hohenthal, 2008 pp. 172-183). The underlying theme in this anthology is that this revolution may involve the concept, and usage, of the student as a resource for reciprocal learning.

The contributions to this anthology have elaborated on this theme from a variety of fields and universities, and sought to answer how a reform of higher education is desirable in order to achieve qualitative and meaningful learning for more students than ever before; it is the ambition to provide education *with* students rather than *to* students.

The idea of students actively participating in each other's learning is not new to the university. From its cradle in Plato's *Akademeia*, the university developed into a forum for dialogue between staff, the authorities of their disciplines, and the students visiting. Though teachers, e.g. Plato, played the leading role, learning was largely conducted through dialogue with the students. In contrast to the rhetorical schools, *Akademeia* was tuition-free; in time, Plato intended it would cultivate a new societal elite of intellectuals (Ambjörnsson, 1997, pp. 101-103; Frängsmyr, 2004, p. 76).

Though dialogue remains a central principle within the academy, the sheer size of modern universities, departments and their range of staff presents a potent challenge for its coordination; what happens within one department, although related to similar subjects, may remain oblivious to personnel on the other side of the university campus. Higher education is in this sense struggling with managing its own growth. And meanwhile, are we now reaching a peak in the amount of students that the Swedish education system is able to facilitate? One important argument of this anthology is that higher education would be able to accommodate the many, rather than the few, and still increase its quality.

What is active student participation?

In this anthology, the term *active student participation* will be used to describe students taking an active role in other students' learning; this might be in the role of mentors, amanuenses, or extra teachers. Additionally, it is the ability of the university to facilitate this practice that defines the possibility for active student participation to renew and sustain itself in the long term.

How to use this anthology

This anthology is about *why* more active student participation has been undertaken and *how* it was done, compiled here in a manner so that it is accessible for use in influencing future projects, reforms and legislation on higher education.

The aim of this anthology is thus to provide the reader with inspiration on the possibilities of students taking an active role in each other's learning, and to give examples of how it has been conducted in a variety of contexts and for different aims. Even though it also contains scientific material, the main focus is on inspirational stories and examples. The narratives included are but a few exam-

ples of how active student participation has been conducted, tried and thought upon at several universities; it consists of research as well as experiences from practice in implementing initiatives for student activation. All of the narratives in some sense elaborate on how higher education could be reformed and improved.

Specific parts of the anthology may be of more use in your particular work, although all of them could be valuable as food for thought and inspiration. You, the reader, may be a decision-maker, administrator, researcher or teacher; in a sense, we are all students and all learning. So ultimately, this anthology is dedicated to you.

Why an anthology on active student participation?

Active student participation will take a variety of forms in various contexts in order to address specific problems. Still, the underlying concept that unites these initiatives is its common cause; how do we allow students to participate in each other's learning? This is the question that the authors of this anthology have made a joint effort to answer. If there is to be a single important structural change during the coming decades, it is the changing role of students who are given more room in defining and contributing to higher education. By illustrating active student participation, and opening up the discussion on its effects, our conviction is to facilitate this development.

Themes of the contributions

The anthology is organised according to overarching themes. Their purpose is to knit the individual papers together and offer an overview of the anthology in its entirety. After this initial introduction the disposition of the anthology and its papers starts with a background of the research relevant to active student participation. Then examples of the structure necessary for long-term implementation and different forms of initiatives are given. These are complemented by examples of how student leadership has contributed not only to the students and their departments, but also in preparing graduates for professional life. The anthology concludes with remarks on the future development of higher education and the role of students within it.

I. Theoretical views

S. Andersson relates the recent and various initiatives of student participation to a general call for active student participation. Higher education has reached a point at which inclusion of students is of importance both to the maintenance and further development of universities.

Muhr takes a neuroscientific approach to how the practice of student activation is closely related to the development of long-term memory. Additionally, question-driven methodologies have several aspects in common with research on mindfulness and neuroplasticity. This suggests why some methods for active student participation are effective in promoting learning among students.

II. Structure

Gillis and Holmer provide a strategic overview of the implementation of student activation at Lund University. Considerations of how to develop a theoretical framework are weighted against the *realpolitik* of the universities decisions between Faculty and Department level. Initiatives are described through their different stages and emphasis is put on the importance of anchoring projects at the Faculty level.

Larsson elucidates the importance of structures for long-term maintenance of initiatives. The mentor programme, developed during Larsson's PhD studies at the Department of Archaeology, Uppsala University, from its implementation until its decline due to a lack of formal responsibility for its maintenance. She summarises the benefits on an institutional and personal level as well as premises for initiatives that depend on students for daily operation.

Gärdebo gives an outline of how coordination of active student participation at a central level can ease communication and learning at various parts of the university. He draws on experiences from implementing a mentorship programme at the Department of History, Uppsala University, and suggests more horizontal power structures within the academy to enable students as a resource. Gärdebo discusses the need to advocate this change and to gather pedagogical initiatives as a portfolio of shared experiences centrally while maintaining decision-making over initiatives at the departmental level.

III. Experiences from implementation

There are several examples of active student participation being implemented at Uppsala University, where students had a central role in its formation. R. Andersson shares her experiences of working with the Department of Psychology, Uppsala University, in developing a student-led project for student activation. Despite

being successful in improving the quality of higher education, the project was unable to sustain itself and Andersson concludes that the need to promote leading figures is essential in securing longevity at an institutional level.

Escobar summarises a university-initiated mentor programme at the Department for Economics, Uppsala University, where students complemented ordinary education and self-studies with student mentors hosting problem-based workshops. The Result was a substantial increase in retention to more advanced studies within the discipline.

IV. Leadership and professional life

The students participating in initiatives and projects have expressed development of generic skills, some of which have been of use in later professional life. Two chapters focus specifically on this contribution of active student participation to a student's subsequent career. Hiltmann was a student mentor who worked with the practical implementation of active student participation at Lund University. Her experiences suggest that generic skills can be developed from working with other students' learning, and that it promotes new forms of collaboration within professional life.

Feldt gives an account of how active student participation was developed at the Medical programme, Uppsala University, and was later used beyond the university to enhance the internship experience at hospitals and in professional life.

V. Visions for the future

Mossberg sketches a framework for a future where student's participation in higher education is a precondition for the quality and survival of the free university. Among his main points of argument are the reasons for undertaking this development within the con-

temporary education system rather than waiting for external changes to come to the university. Mossberg discusses from an international perspective and includes issues of resource scarcity, within and outside the academy, for his analysis.

Manblom shares his first encounter with student activation at the Department for Neurosciences and from this develops on why students would be willing to continually endorse its long-term maintenance. Furthermore, he discusses the university as a private enterprise with an increasing need to remain competitive and to offer more to its students and personnel.

Jacobs and Rabie give an economic analysis of how universities, within varying contexts, can use students as a resource. Examples depict how structures for learning and student participation have been established where students are expected to take a central role for maintenance and reciprocal learning.

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Intellectual debt is due to the authors themselves for sharing research and experiences from different disciplines, universities and contexts. In relation to this, we acknowledge the importance of student and staff for continuously developing initiatives for more active student participation. It is from their challenges and experiences that this volume draws upon for its argument. Thank you.

I.
THEORETICAL VIEWS

Hearing the call for active student participation

Staffan Andersson, Associate Professor at the Department of Physics and Astronomy, Uppsala University

Calling for change

As the landscape of higher education continuously transform, calls are raised for improvements and change. There are a number of motives for this, such as quality issues, need for a qualified workforce and concerns for student learning. With a growing demand for people with a higher education degree and an increasing number of students starting undergraduate programmes, these calls are currently both loud and numerous. How can we cater for a growing and more heterogeneous student population? What practices are needed to help more students learn better and reach their goals?

One of the loudest and most common calls for educational change is the call for active student participation – the theme for this anthology. This broad call for changing of practice is answered in a number of ways, ranging from small-scale interactive learning elements to complete transformations of curricula and educational principles. The common core is creating collaborative learning conditions that can help students, academic institutes and other stakeholders to achieve some of their goals.

The call for active student participation has a strong foundation in scholarly investigations on what constitutes successful educational practice. The call has been particularly loud in my own areas of practice – student retention and physics education research. I will discuss the primary reasons why active student participation

constitutes a key component for successful educational practice: it facilitates long-term learning, it improves student retention and it helps student's personal development. Some common concerns regarding active student participation are also explored: that it can be experienced as unfamiliar and unnecessary, that it is sometimes seen as not being worth the effort, and that activities could exclude some students from the higher education community. These concerns are addressed, together with suggestions on how they might be overcome.

This article draws upon a number of active-learning projects in which I have been involved. These projects also provided all quotes used for illustration.

Reasons for active student participation

There are three closely related reasons for adopting active student participation strategies in higher education: better learning, improved retention and student development. These reasons are, of course, closely connected to each other. Active learning approaches can greatly contribute to improved student learning. Students participating in these types of activities also continue their studies and reach their degree to a much larger extent than other students. The wide goal of personal development is also supported by active student participation. The important point is that institutional conditions that, in one way or another, encourage collaborative learning are more likely to promote knowledgeable and engaged students who graduate. As a consequence, answering the call for active student participation can help all concerned, from students to politicians, to achieve many of their goals for higher education.

Active participation improves learning

> *One must try to apply learnt knowledge in a more creative fashion, unlike the regular reproduction activities.*

Learning is by definition one of the central goals for any type of education. Research and discussion regarding the efficiency of different teaching and learning strategies fill a multitude of books. However, a number of different studies have shown that active student participation certainly can help us reach the goal of improved learning. This is particularly true for a deep approach to learning aiming for conceptual understanding. This has been studied in many different fields, but especially so in physics.

Studies of learning and efficiency of learning strategies in physics and related fields often rely on Concept Inventories – validated tests on subject knowledge. The inventory design relies on previous research regarding student understanding in the field and address known problem areas. Results from concept inventories before and after different learning sessions can be used as an indication of learning efficiency.

The first such widely adopted tool was the Force Concept Inventory which paved the way for a substantial effort to explore, develop and evaluate physics instruction methods (Hestenes, Wells & Swackhammer, 1992). In a seminal paper, Hake (1996) clearly showed a greater efficiency of interactive-engagement methods for learning compared to traditional instruction practice. Although the results presented by Hake only concern basic mechanics courses, this study has had a huge impact on the adoption of active learning strategies in science and technology education. Continued research in other fields has also shown similar results.

The value of collaborative learning is widely recognised and explored in the literature. There are also a number of reviews summarising and discussing the research from different perspectives (such as Michael, 2006). In a large synthesis of meta-analyses relat-

ing to achievement, Hattie (2009) concludes that the overall effects of the use of peers as co-teachers, of themselves and of others, are quite powerful.

It is not, however, simple to directly measure learning efficiency, especially for individual teachers (Tinto, 2010). Student self-reported experiences of learning are therefore often used when evaluating development initiatives. This has been done for many active learning tasks and participating students generally report that they feel that such initiatives have a positive effect on their learning. Collaborative activities are commonly seen as enriching complements to other activities.

Active engagement improves student retention

> *Nothing has been more important [to my success] than support from other students, working together with Supplemental Instruction [SI], tutorials, labs and other stuff.*

Student retention – the ability of institutes of higher education to keep their students – is another area where active student engagement can play an important role. Although factors affecting student retention are numerous and affect each other in very complex ways, active and collaborative student learning has been identified as an important contributing factor. The interactions with both faculty members and student peers have an important effect on student retention and academic success (Pascarella & Terenzini, 2005). A primary reason for this is the influence of such interactions on how well students feel at home in the social and academic systems they encounter (Tinto, 2010). Collaborative learning activities encourage such interaction in ways that are often perceived as creative and positive. Many activities aimed at improving academic integration of new students adopt such engaging strategies to facilitate student interaction and support the growth of student supportive networks (Andersson & Andersson Chronholm, 2012).

Institutional environments supporting interaction between students not only improve learning, but also help students to continue their studies and reach graduation. An example of this is the new introduction programme introduced at the bridging year education at Uppsala University in 2008. A combination of active student participation and other strategies greatly improved retention on the course (Andersson Chronholm & Andersson, 2011a). This project also exemplifies how well-chosen active learning tasks can be integrated in a larger educational context to reach and involve most, if not all, students in a group.

A number of European engineering educators are currently evaluating student retention practice within the EU project, ATTRACT. This project surveys all types of practice, such as scheduling, academic advisors and work connections. It is illustrative to note that three of the five best-ranked practices in this survey were different active learning initiatives: Peer mentoring, SI and Tutoring (Andersson, Gelin & Marklund, 2011).

Active collaboration contributes to personal development

> *The collaborative learning tasks made me see why there was a point to learn this [...] the use for this knowledge, if you know what I mean.*

Another important effect of active learning is personal development of participating students. A number of studies have identified the interaction with peers as a critical source of influence for virtually every aspect of personal development, such as cognitive, affective, psychological, and behavioural aspects. Positive effects from active peer interaction in higher education have been observed for overall academic development, knowledge acquisition, analytical and problem-solving skills, and self-esteem. Studies have shown that these effects are most significant for students taking a leading role, such as SI leaders and peer tutors (Kuh, et al. 2007). Hattie

(2009) argues for the importance of active peer learning for the transition from being a student to that of being a teacher of oneself.

The importance of peer-interaction is also a recurring theme when Swedish students report important factors for their academic success (Andersson Chronhom & Andersson 2011b). The introduction of active learning activities raises important questions regarding learning and educational goals to both students and teachers. Participants in a number of active learning projects have reported discussions about these questions and the resulting personal development as an important outcome.

Concerns about the call

There are strong motives for responding to the call for active engagement strategies in higher education. The answer is often very positive, but sometimes resistance or concern meets this call. There are some commonly recurring objections: active learning is unfamiliar and unnecessary; it takes more effort than it is worth, and there is a danger that active learning excludes some students. In this section, I will explore and address these concerns.

Isn't this unfamiliar and unnecessary?

> I never needed this student activity stuff to get through my education, so I can't see why we need to bother about it.

There is reluctance towards active student participation from academic staff, some of whom see it as something unfamiliar. They do not recognise peer learning and active engagement from their own educational experience, so why would someone need it? However, most of these concerned teachers adopted their own active learning strategies, for example studying together with peers. Moreover, as increasing numbers of students are enrolling in higher education,

the educational system has to cater for an increasingly heterogeneous group of learners.

There are a number of different strategies for successful learning, but for a large majority of students collaborative learning is one of the most effective. Redish (2003) argues the importance of remembering that: "Our own personal experiences may be a very poor guide for telling us the best way to teach our students". Both teachers and students have to take this into consideration, regardless of their own feelings and experiences.

> I can't see the point of us having to discuss things and play around. The teacher knows how it is and it should be his job to just tell us.

The reluctance to adopt active participation strategies is often just as pronounced among students as among staff. Teachers trying to introduce active learning report that attendance at these sessions is often significantly lower than at lectures or "normal" lessons. Discussions with students usually reveal that they, at least initially, are reluctant to work in unfamiliar ways that they perceive to be less efficient.

The key point regarding this concern about active learning is that some resistance is usually to be expected when moving out of our comfort zone. It might initially seem strange to teach and learn in unfamiliar ways, but that does not necessarily mean that it is bad. The truth is quite the opposite, at least in the case of active leaning.

Discussions regarding the goals of education are often very helpful here. All involved need to be open about their motives and perhaps question what they are. Active learning might not be the best approach for strategic learning aimed at students passing examinations with the least effort, but is this truly a worthy goal of teachers or students? Discussions about this question are important on all levels and often lead to further issues, such as the very nature of knowledge, learning and education. Exploration of these issues will

hopefully help both students and teachers see reasons for answering the call for active student participation.

Is it really worth the effort?

> *Well, we do learn a lot, but we can't be expected to work this hard when we are taking courses in parallel. I think it's better when the teacher just tells you. You save time and you are sure to get it right.*

Another common concern regarding collaborative learning tasks is the effort involved. There is an initial effort of adopting these strategies and adapting them to one's own practice, both for teachers and learners. There is also the continuous effort of arranging and participating in active learning. Active participation in learning tasks is by its very nature demanding, but it is to a large extent this very effort that gives the constructive learning. This potential for better learning is hopefully worth the extra effort. This relationship is, however, something that needs to be explained and discussed, often in great detail.

In our investigations of active learning initiatives both teachers and students reported that active engagement demands greater effort. In many cases, the extra effort of additional preparation and more active engagement in activities, at least initially, discourages participation. There are two important parts to this puzzle. Firstly, the participants need good motivation to why it is worth the extra effort. Secondly, a manageable balance must be reached between the demands from active learning and other demands on both students and teachers. Many teachers utilising active learning also adopt a reduction in course content. All agree that the increased student learning more than compensates for this (Knight, 2004).

Is active learning excluding some students?

> I can't participate in most of those afternoon and evening learning activities. For me they mainly feel like reminders that I'm "wrong" [...] like I'm not supposed to be here.

Although active student participation shows many positive effects for a majority of the students, not all methods work wonders for everyone. There is a concern that initiatives for active student participation favour certain groups of students, primarily high-achievers or those fitting certain norms. Some activities effectively make successful students even more successful, whereas other students are left behind. This is often particularly true for activities designed by someone with an incomplete knowledge of the whole student population.

Feelings of exclusion are a recurring theme for students changing programmes or dropping out of higher education altogether. It is therefore important that all students are taken into consideration when designing a learning environment. There are a large number of different active learning tasks available to choose from and there are many ways to use them. Combining different methods can be an effective strategy for creating an inclusive active learning culture.. One single learning activity rarely works for all students, but a variety of active learning tasks can provide all students with constructive experiences.

It is also important that different initiatives, for example mentor programmes, SI and web-based discussions, are integrated within the education as a whole so that they are not seen as an optional activities for some of the students. This requires knowledge and consideration by those responsible for implementation and is necessary for active participation for all students.

Answering the call

Answers to the call for active student participation will help everyone concerned achieve goals on many levels, from individual development and learning of students, to efficiency of educational systems and availability of well-qualified graduates. Large amounts of research and tested experience has convinced me that active learning strategies must be a vital part of contemporary higher education. A growing and increasingly heterogeneous group of students are working their way through higher education towards a dynamic future with rapidly changing conditions. Active and collaborative learning will help them to both succeed with their studies and to prepare for their future.

Practice makes perfect

Answering the call for active student participation is in itself a collaborative and active task. We have to work together sharing knowledge, experience, and practice as well as lending support when we can. There are numerous good examples of how this can be done and some of them can be found in this anthology. The driving forces behind this call are a shared appreciation of the value of collaboration, its relevance to the demands on contemporary higher education and an active exchange of ideas. The call is getting louder. By answering it and keeping the call for active student participation alive, we can help make it part of established higher education's culture and values.

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The relationship between Supplemental Instruction (SI), student leadership, mindfulness and neuroplasticity

Carin Muhr, MD PhD, Certified SI Trainer, Associate Professor at the Department of Neuroscience, Uppsala University, and
Deanna C Martin, PhD, Founding Director of SI and Centre for Academic Development, University of Missouri, Kansas City, USA

Introduction

In this chapter we will discuss the correlation between research on neuroplasticity[1] and the training of mindfulness. This is related to evaluated projects on active student participation in order to understand the effectiveness of student leadership that uses Supplemental Instruction (SI) methodology to enhance learning and personal growth for students participating. From this hypothesis, implications are drawn for how higher education, and learning in general, can be structured.

The academy is undergoing a paradoxical, albeit apparent, transformation. As each subject and discipline becomes more specialised, there is an increased demand for interdisciplinarity and a coordination of efforts. Meanwhile, society itself is becoming more multicultural with new student groups entering the university, and demands for international work and research abroad being expressed. Higher education is growing together and moving apart at the same time.

[1] Neuroplasticity is the property of the brain that allows it to change structure and functions due to experience; a process that continues throughout life.

In relation to this, SI methodology has been successful in introducing a complement to ordinary studies that allows this new academy to meet over disciplinary borders and increase retention among its new student groups (Martin & Hurley, 2005). As the cornerstone of SI is a question-based methodology that focuses on differing perspectives and awareness of one's own reactions, it is essential to understand what part this plays in explaining its results for student leadership and active student participation.

Student leadership in practice

Experiences are drawn upon from two pedagogical projects using SI methodology, both using an interdisciplinary approach and students from different levels in their education. Additionally, student leadership was used for the day-to-day maintenance of the projects; students facilitated the meetings and seminars worked closely with the project management.

TeamSI

TeamSI combined students in medical training from different semesters in order to integrate learning between the preclinical neurobiology science and the clinical neurology practiced by students later on in the programme. The project encompassed a hundred students and results were published in 2006.[2] Senior students were trained in facilitating SI meetings and self-reflection to evaluate their own performance and perspectives when leading of a group of peers (Doidge, 2007; Langer & Benevento, 1978, pp. 886-893; Langer, 1979; 2009; Schwartz & Begley, 2002). Project management acted as critical friends (Costa & Kallick, 1993, pp. 49-51), providing critique and support to the students and also encouraged them to take initiatives of their own.

[2] Funding was provided by The Swedish Council for Higher Education.

The evaluation suggested that facilitating students experienced a development of generic skills and understanding of how their perspectives impose limits on their worldview.[3] The facilitating students also expressed that the primary benefit from participating was awareness of their own reactions when leading others and had benefits for personal growth, leadership skills and subsequent professional life.[4]

Leadership course

Another interdisciplinary SI project was the course "learning and teaching leadership", for students from law, medicine, psychology and personal resource, as well as several PhD students. Seminars included theory and practice of conflict resolution, communication skills and self-assessment of own reactions. The students were trained in SI, facilitated meetings and evaluated the performance of others.

Students experienced that it was the combination of practical and theoretical leadership that stimulated them to reach syllabus goals. Also, interdisciplinary discussions and support from facilitating students played an essential part in constructively challenging previous perspectives.

Lessons learned

The interdisciplinary approach used in both TeamSI and the course "learning and teaching leadership" elucidated the need for bridging different perspectives on knowledge and an awareness of participating and facilitating students to evaluate their own performance and

[3] Evaluations were conducted by interviews and focus groups from the project leaders and pedagogues from the Division for Development of Teaching and Learning (PU), Uppsala University.

[4] This latter point was confirmed by follow-up evaluations after the SI leaders had approximately 15 months of working experience as physicians.

perspectives. This proved manageable in TeamSI, which brings us to the topic of why the methodology of SI is successful in promoting learning. And what are the plausible relations to research results on neuroplasticity and principles of mindfulness; again, how is the SI methodology able to promote interdisciplinary learning in an academy that is becoming increasingly atomised?

Neuroplasticity and mindfulness

Neuroplasticity and learning

Research on neuroplasticity provides models on the functions related to the learning process. Neuroplasticity is the property of the brain that allows it to change functions due to experience; a process that continues throughout life (Doidge, 2007).[5]

Central to learning is the linking together of neurons into networks, resulting from a chemical change when they are fired, paraphrased by neurobiologist Carla Shatz as "Neurons that fire together, wire together" (Hebb, 1949). Furthermore, neurotransmitter dopamine enhances neuroplasticity; dopamine is a "pleasure" neurotransmitter stimulated by novelty (Langer, 1997). To be able to create both pleasure and novelty is thus crucial for neurons to be activated together and for learning to occur.

Another aspect of neuroplasticity is the necessity for neural integration to achieve learning and, in a wider sense, mental health. Neural integration refers to the different parts of the brain that are connected, the middle prefrontal cortex being the most important of these as it is the region of the brain used for executive functions. Neural integration is essential for the ability to stay focused during thinking (Siegel (2010b).one's your own thinking as *mindsight*, e.g. becoming aware of one's reactions and perspective. This is an essen-

[5] At critical periods, i.e. during childhood, plasticity is more favourable for some abilities. However, all mental activity later in life also contributes to neuroplasticity.

tial step in developing the capacity of the mind. Mindsight is also related with neuroplasticity´s neural firing and the forming of neuron networks; the thinking of the mind shapes the neuron composition of the brain, and vice versa. Awareness of the thinking of oneself and others is the activation of mirror neurons and the Insula, the brain region essential for empathy. What has been described so far is thus a structural and functional base in the brain that can be developed to support learning, mental health and well-being.

Mindfulness and personal growth

Mindfulness can be defined as having attentive awareness; bringing complete attention to the present experience on a moment-to-moment basis. Awareness of one's thoughts, emotions and reactions is in this sense non-judgmental (Epstein, 1999; Kabat-Zinn, 2003, pp. 144–156). Mindfulness dates back to eastern philosophy focused on well-being with the perspective that a person's mindset can result in dramatic changes to the character, abilities and health of that person (Doidge, 2007; Langer, 2009; Schwartz & Begley, 2002). Mindfulness has been extensively researched in different disciplines and proven effective in treatment of medical disorders, both mental and somatic (Davidson, et al., 2003, 564-570; Grossman, et al., 2004, pp. 35-43; Carlson, 2007, pp. 1038–1049).

Langer (1997) emphasises the essential in applying a "beginner´s mind" when aspiring to a mindful approach to learning: "A mindful approach … has three characteristics: the continuous creation of new categories; openness to new information; and an implicit awareness to more than one perspective". Learning requires involvement in the information; merely memorising is ineffective for long-term retention. "In a mindful state we implicitly recognise that no one perspective optimally explains a situation. Therefore, we do not seek to select the one response that corresponds to the situation, but we recognise that there is more than one perspective on the information given and we choose from among these".

Mindfulness is related to leadership through its emphasis on empathy. Being mindful enhances the ability of interoception, e.g. sensitivity to stimuli originating from inside the body, which allows registration of the intentions of other people. In neuroscientific research, this is related to the mirror neurons of the observer (Siegel, 2010a). Developing interoceptive abilities is essential for enhancing empathy and understanding others.

Student leadership in relation to neuroplasticity and mindfulness

Why is it that student leadership generates results both for students of varying disciplines and backgrounds, and the students facilitating the leadership? The discussions of neuroplasticity and learning, as well as mindfulness and personal growth, will here be related to the practical experiences of student leadership through SI methodology.

Neuroplasticity as practiced in SI

Student-led meetings, as in SI groups, rely on the circumstances suggested for enabling neural integration and neuroplasticity. Evaluation from TeamSI and the leadership course supports that the experiences from student leadership correlate to Siegel's research on mindsight and mirror neurons; the ability to enhance empathy and awareness of one's thinking. Feeling safe with the facilitating student, the group, and the meeting situation itself, is crucial in order for students to express differing perspectives on a topic. The training in awareness for the SI leaders is one example of how this mindsight is pursued during SI. Furthermore, neuroplasticity is promoted due to the question-based approach to learning; students are guided in seeking their own solutions to problems rather than learning curricula goals by heart.

Neuroplasticity is in itself neutral and learning of less advantageous things do occur as well; for example, anxiety learned in relation to examination can lead to inability to perform at later examination occasions. Training of the SI leaders' ability in creating optimal learning environment, where students are both challenged and supported, is thus a recipe for allowing neurons to connect. As a result, students participating in the SI projects described earlier undertook examinations to a higher degree, and achieved better results in these, than their peers.

Mindfulness as practiced in SI

Throughout all the stages of SI, reflection and self-evaluation is central to the facilitating student. Although question-based learning is not expressed explicitly as mindfulness, it is composed of a range of similar characteristics; being present, actively listening and open-minded to expressions, intentions and reactions. What further supports this view is that the abilities developed through student leadership as described by participants as transferable to other contexts.

The facilitating students' *attitude* had significant implications for their student groups, and similar effects have been reported in other fields of study. Clinician´s empathy, as perceived by patients with the common cold, is related to changes in the immune system; the doctor influences both the duration and severity of the illness. The same has been described of patients practicing mindfulness regularly (Davidsson, 2003; Rakel, et al., 2009, pp. 494-501; Krasner, 2009). Similar development, in relation to learning, was expressed in the evaluations of SI methodology on the importance of the facilitating students for the group's learning. Allowing different perspectives to be used for operationalising the students questions also implies, as a prerequisite, that the SI leaders themselves reflect upon their emotions and reactions during the meeting. In addition, it emphasises the need for critical friends in developing the facilitating students themselves.

Summary

The SI methodology includes many components documented in neuroscience research and practices of mindfulness for enhancing mental well-being, stress management and learning. Though the relationship is not explicit in these projects, their success in developing learning and personal growth for the students can, to a significant extent, be ascribed to how well they achieve this connection. Studies of neuroplasticity as documented structural and functional changes of the brain that correspond to positive effects of mindfulness training. This is the essence of using the *mind* in order to change the *brain*. The correlation of SI to mindfulness and neuroplasticity is indicative of why specific methodologies function well and should be held in mind for a change in the perspective, and approach, towards learning.

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II.
STRUCTURE

SI and the Lund Experience

Carole Gillis, Associate Professor at the Department of Archaeology & Ancient History, Lund University and
Arthur Holmer, Associate Professor of Linguistics, SI-Coordinator at the Faculty of Humanities & Theology, Lund University

Introduction: Before SI

The door opens, right on time. The teacher enters the classroom, takes out his or her notes and starts the PowerPoint. The students stop whatever else they are doing and take out computers or notebooks and pens, poised to write. After two hours of talking, pointing and changing slides, the teacher glances at his or her watch, finishes the sentence, and exits the room while the students close their notebooks and rush out the door; end of 'teaching'.

How much will the students retain? And more to the point, how much have they learned? Probably very little since they were concentrated more on multitasking and getting it all down than on absorbing the content of the lecture. Later on, when the exam rolls around, they will take out their notes, read through them using whatever memorising strategies they may have, enter the examination room and take the exam. Shortly thereafter they will have forgotten most of the course content; end of ´learning´.

Although a worst-case scenario, variations of the procedure are common. The effects of budget constraints on higher education have taken several forms; insufficient class hours; over-crowded groups and compact lectures; uninspiring pedagogy and study forms; insufficient preparation of undergraduate students upon entering the university. These are some of the factors limiting both devoted teachers and knowledge-thirsty students. The situation is

unsatisfactory for all concerned and in the end, problematic for the entire university, whose mandate is to teach. Are there any alternatives?

What are the viable alternatives despite, or within, the present budget limits? One alternative would be a fundamental restructuring of the pedagogical practices of the university, so as to supplement, and in some cases replace, the phenomenon of lectures with interactive seminar sessions, where students can inductively generate understanding on the basis of collaborative learning and problem-solving. One such model is Problem-Based Learning (PBL), applied satisfactorily at some departments at Lund University. However, restructuring of this magnitude takes a long time and great effort to implement in a course, and more so for education programmes. Therefore, the challenge for the Faculty of Humanities and Theology at Lund University was to find an alternative model of student involvement which could be combined meaningfully within the traditional lecture system, allowing a much more flexible implementation in courses within various departments across the entire faculty.

This chapter develops on the involvement of students as active partners in enhancing each other's knowledge and learning capacity and doing so within the current education system and its budget limits. What follows is an introduction to Supplemental Instruction (SI) at Lund University: how it was introduced, its functions, how it is evaluated and its costs in relation to the benefits.

SI – A background history

SI was created at the University of Missouri-Kansas City (UMKC), USA, in the early 1970s in response to institutions opening their doors to new groups of students: former soldiers coming back from the war in Vietnam and studying on the GI Bill, and students from

non-academic backgrounds.[6] For the universities, the greater the outreach to non-traditional university students, the greater the problems of retention. Dr. Deanna Martin at UMKC developed a method whereby students were trained to take an active part in their own, and other students´, learning processes. This *Supplement to Instruction*, later *Supplemental Instruction* (SI), was added as a complement to ordinary curriculum. The retention rates rose, grades improved and both students and the institutions were satisfied.[7]

What is SI and how does it work?

SI has several components (Gillis, 2008, pp. 83-92; Bryngfors & Gillis, 2009, pp. 150-154)[8]: it is completely voluntary; students meet in small groups, preferably 7-10 people; the group is led by a fellow student, in the role of SI-leader or 'mentor'[9]; meetings are question-based, no teaching is involved – thus, the mentor, or SI-leader will not answer questions, but redirect them to the group. For example, after a lecture in art history, a student might say, "I don't understand the idea of post-modernism that the teacher took up today in class. What is it exactly?" The mentor prompts the group in various ways to discuss the concept or to give examples if students still feel that it is unclear. In history, the students might outline the causality of events on a timeline; in math, students use a whiteboard to present and discuss equations while the mentor of the meeting facilitates constructive critique. This is *collaborative*

[6] There is a great deal of literature on student preparedness or lack of – see, for example, Engström & Tinto, 2008, on the aspects and problems of retention. For a complete bibliography for Tinto, see faculty.soe.syr.edu/vtinto/

[7] See, for example, www.umkc.edu/cad/SI/overview.html and www.umkc.edu/cad/martin.html

[8] For complete presentation, see www.si-mentor.lth.se

[9] As most SI groups are found in first-semester courses in any subject, the mentor is often a third-semester student. A 4th-term student, a masters' student, or even a beginning doctoral student can lead SI in higher levels.

learning at its best.[10] The students learn by doing, and learn how to learn. Facilitators are responsible for making the meetings relaxed so as to enable students to reveal knowledge gaps and contribute to solving them.

The programme focuses on three major aspects of learning: the course content, study techniques and social/academic integration. Course content is the focus of the SI meetings; it is of relevance to all participating students. Study techniques are needed in varying degrees, depending on the students' background and level of previous studies, but everyone is able to improve their study skills. The aspect of social/academic integration arose through the realisation that students can identify and feel solidarity with a peer group; moreover, solidarity can be extended to incorporate senior students and the department, thus developing a sense of belonging, which often takes the form of increased participation and better study results. Learning while discussing with fellow students over coffee and a bun is the practical meaning of creating an academically relevant social context.

SI in Lund – pioneer in Scandinavia

Adoption of SI has proven successful in various contexts and disciplines. The first initiative for SI in Sweden was developed at Lund University by Leif Bryngfors and Marita Bruzell-Nilsson in the Faculty of Engineering (LTH). After participating in training at UMKC in 1993 the first SI groups were started in subsequent years; by 2012, SI encompassed 17 programmes and departments

[10] Collaborative learning is based on the perspective that the whole is greater than the sum of its parts; pooled knowledge in a group of students is greater than any given individual in the group. By discussing various aspects of the course content together every student can contribute to this shared pool, and by doing so, can also increase his or her own understanding of the subject. Even students who know the course content will benefit, since they learn to apply this knowledge in new ways and even explain it to others.

at LTH (Bruzell-Nilsson & Bryngfors, 1996; Malm, Bryngfors & Mörner, 2011b, pp. 6-7).

During this period, initiatives also spread to other faculties, universities and for differing purposes. Gillis developed SI at the Department of Classical Studies (AKS) in 2001 as a means to address decreasing retention rates. By 2008, every department in the Faculties of Humanities and Theology (HT) had applied SI.[11] Some courses within the Faculty of Social Sciences and the Faculty of Medicine have also been included under the aegis of HT.

In some instances, students and student organisations have requested SI in the department and courses. It appears to spread more easily among students than university staff. This may be due to the role students have in SI of active participation in each other's learning.

Use of SI, varying contexts and purposes

Implementing SI, preferably at undergraduate level, e.g. introductory courses, has advantages for several reasons (Gillis & Söderbergh, 2008)[12]:

- Introductory courses have thresholds of how higher education is conducted and affect the scientific framework within the discipline. Most students are new to university studies, being unprepared or unsure of what is expected of them,
- SI gives lasting advantages for the student's further studies; as a method of collaborative learning, SI can be used by the student at more advanced levels and in other disciplines,

[11] For a more in-depth discussion of SI at the HT faculties up to 2008, see Gillis, 2008, pp. 89-90.

[12] For some subjects, SI was also implemented on a trial basis for the second semester of certain subjects.

- Recruitment of facilitators to SI meetings is favourable for introductory courses; the number of students tapers off at higher levels and facilitators should preferably have at least two semesters of study above their group.

Though primarily implemented at the first-semester level, further developments have included research courses and collaboration between university and secondary school. At HT, the Student Union was concerned about the performance of students writing at Bachelor thesis level; though grades and retention of undergraduate courses had improved, students required further skills to formulate research questions and present results. In many ways, the challenge for students writing a Bachelor thesis is reminiscent of that faced as university freshmen: a dramatic increase in individual responsibility coupled with a decrease in externally imposed study structure. SI was introduced as a pilot for courses with a major independent essay; 'major' being equivalent to 7.5 hp[13] credits or more. At present, SI is implemented in approximately 50 percent of courses with 'major' essays in the HT faculty.

At LTH, collaboration with secondary schools was initiated, the aim being to apply the SI method to difficult courses in secondary schools. University students facilitated the meetings, teaching pupils collaborative learning and informing them of higher education in general (Malm, Bryngfors & Mörner, 2011c). A parallel project for the Humanities is at present being developed.

Thus, from a core at LTH and HT, and at the first-term level, SI has been expanding during the last few years, both horizontally to other departments and vertically from introductory to advanced levels in the education system.[14] One of the factors underlying this

[13] "hp" refers to Study Credits. One study week equals 1.5 hp.

[14] This even included a very popular 'Cafe Multilingua', where the student cafe was opened one evening a week for all language students. The mentors from all the language subjects were on hand: one could hear Arabic, Japanese, French, and a variety of other languages.

expansion seems to be the fact that it can be applied as a supplement to traditional lecture-based education and therefore does not require a major revision of the course structure. In practice, the course can continue as previously, with the active participation of students ensured by the addition of SI.

Causality of SI – does it work?

SI has positive effects on students' results. Several studies, both qualitative and quantitative, suggest a correlation between attendance at SI meetings and retention. In some introductory courses at HT, 76 percent of SI students completed the course, compared to 50 percent of non-SI students. In addition, 35 percent of non-SI students and 58 percent of SI-students continued from first to second semester within the subject. There is a particularly strong correlation between SI attendance and participation in the examination; at the Faculty of Engineering, the percentage of SI students who took exams varied between 95 percent and 100 percent, while the percentage of non-SI students was approximately 85 percent (Malm, Bryngfors, Mörner, 2010, pp. 30).

Does the correlation between SI attendance and retention imply that SI *causes* positive effects for students? SI, and active student participation in general, could attract well-performing students who would have satisfactory results, either way. Or students who drop out of courses naturally do not participate in complementary activities, so it should come as no surprise that there is a correlation between drop-out and non-attendance at SI.

An example to illustrate causality would be to study two comparable subjects, one applying SI and the other not. Within the Humanities, there are no such commensurable subjects. Most departments have implemented SI already, and the prevailing differences may be due to popularity of the subject, individual performance of professors and/or study traditions of the department.

Quantitative studies on SI

An alternative approach used is the comparison between two different semesters for the same course, before and after SI being introduced. Nelsson (2005, pp. 7-9) recorded no significant improvement when SI was implemented on a large scale in autumn 2002. In fact, there is even a gradual deterioration between 2000 and 2004. Put into context, the initiative coincided with a period of dramatic fall in student applications (Gillis, 2005, p. 8). Given this, it is possible that SI did have a positive effect in cushioning what might have been a more severe drop in student retention within the Humanities.

At advanced levels, for example writing courses, results of SI have been more favourable, although anecdotal and limited in extent. In spring 2011, five students took the Bachelor course in Linguistics; two defended their BA theses. In the autumn semester, the same structure of the course was preserved, but with the addition of SI. Nine students where registered and seven of these defended their theses during the semester.[15] Statistically, the rise in retention from 40 percent to 75 percent is very favourable for initiatives using more active forms of student participation. Naturally, it is quite likely that SI was not the only factor involved; an increase in experience and routine of the department could play a decisive role. Nevertheless, an increase in passes is partially attributable to the introduction of SI.

The multitude of factors that could affect results, risks obscuring causality between SI and its ´results´. For this reason, other tests are

[15] It might be argued that the delay across semester boundaries implies that some of the students defending their BA theses during the autumn actually started during the spring and that their success rate has nothing to do with SI. However, if it were simply a case of delayed results, we should expect that students who were registered earlier might have defended their thesis during the spring of 2011 – the delay should have the same effect semester after semester. Further, the fact remains that the decision to go ahead and defend their theses coincided exactly with the first semester when SI was introduced, which is presumably no coincidence.

being developed. In LTH, various studies have shown that *within* homogeneous groups of students with similar secondary school grades,[16] there is a highly significant correlation between SI attendance and university grades. Indeed, their university grades correlate much more closely with SI attendance than with their high school grades (Malm et al. 2010, p. 52). SI does not exclusively attract high-performing students who have had high grades since high school; data from LTH indicates that SI helps students at all levels to improve results.

Qualitative approaches to SI

In the HT faculty, a similar study is under way. Instead of focusing on high school grades as a measure of previous qualifications, we are basing our investigation on an assumption that student attitudes and aims are at least as important as student qualifications within Humanities. At the beginning of each semester, new students in a subject are asked to fill in a questionnaire about whether they intend to study more than one semester of the subject, how many hours per week they intend to study, how they would rate their self-perceived level of ambition and interest in the subject. At the end of the semester, another questionnaire is handed out, with similar questions regarding study attitudes, interests and aims, plus the crucial question of SI attendance: whether or not they attended and if yes, how often.[17] The hypothesis is that for students with comparable levels of self-perceived ambition at the beginning of the semester, an increase in ambition at the end of the semester will correlate significantly with high SI attendance. The first results will become available in autumn 2012. We hope to be able to

[16] That is, those who would be expected to have comparable qualifications in their background.

[17] The questionnaire also includes qualitative questions concerning the impression the students had of SI: if they did not attend, why not, and if they did, what they got out of it.

demonstrate quantitatively and qualitatively the belief held by people working with SI that it can contribute significantly to retention by stimulating ambition and study attitudes.[18]

Costs and benefits of SI

In the real world of university economics, everything comes with a price tag, and must be economically driven: is the increased cost of active student participation compensated in a significant way by advantages that can be measured quantitatively? Can a financially responsible department, faculty or university administration justify complementary education models like SI? This chapter argues that increased retention offsets costs of SI, for example salaries to staff and students involved in facilitating the meetings. Furthermore, the qualitative effects, though less discernible statistically, are of value to the university in the long term.

Economic rationale of SI

At HT, one student taking a single hp credit generates revenue of SEK 265[19], while one student taking a prototypical 7.5 hp course generates a revenue of SEK 2000.[20],[21] Given that a single mentor meeting costs SEK 600[22] including social security fees and taxes, it follows that every extra student that passes a 7.5 credit module generates revenue enough to finance in average three mentor meetings. For a 15-credit course, for example a BA thesis, every extra

[18] The two questionnaires can be linked together since both include a slot for a masked civic registration number (certain predetermined digits from the 10-digit Swedish civic registration number). In practice, this makes it possible to correlate the two questionnaires with the same individual, thus preserving student anonymity while allowing longitudinal intra-individual comparison.
[19] Approx. € 30
[20] Approx.€ 227
[21] Figures are approximates
[22] Approx. € 68

student who passes generates revenue enough to finance all SI meetings complementary to the course.

Once significant data are available about the average effect on study attitudes, aims and ambitions, as well as concomitant results, it will be possible to evaluate exactly how much extra revenue each implementation of SI can generate, and to what extent this overshadows the cost. This must remain an empirical issue to be addressed, although estimates from LTH leave room for optimism.[23]

SI generates a quantitatively measurable improvement in study results, which is of importance to the students. We have also seen that SI can support its costs by enabling more students to pass and increasing retention within the discipline.

Qualitative effects of SI

SI has qualitative effects for the students and university; indeed, these may be more important and lasting than quantitatively measurable effects. In interviews and questionnaires (Gillis 2004; 2005)[24], teachers note that students involved in SI are more prone to formulate questions and engage in discussions. They have a better ability to think critically, analyse, perform independently and use study techniques than non-SI students. Further, their understanding of the course material is deeper and in some sense "better". These factors make teaching more stimulating and challenging for the teachers.

The developments are of a generic nature; students learn communication skills and are susceptible to perspectives within their own and other disciplines; they realise that the written word is not

[23] Estimates are that revenue at LTH outweighs the cost by a factor of 3 to 1. For details, see Malm, Bryngfors & Mörner, 2011a, pp. 1-12; Other sources suggest that in a university financed by tuition fees, the gain could exceed costs more than tenfold. For details, see Congos, 2001, pp. 301-309.

[24] Results of questionnaires in 2008 distributed to chairmen of the board, all the teachers of classes with SI, and all the directors of studies in each department.

sacrosanct; they actively participate in group work and each other's learning. Intellectually, they give-and-take, and foster tolerance and respect for others' opinions and ideas.

Social and psychological effects of SI are presumably as important as the pedagogical effects. Leadership, initiative, group work and creativity are important for their future work life. This is perhaps particularly noticeable in the experience of SI-leaders, as they not only participate in the collaborative process: they are also trained in collaborative work, and get to practice and develop the skills necessary to enable effective team work.[25]

These skills are not the highest priority of the individual disciplines at university, but they do contribute to the standing of a university as a whole and are important to take into account; institutions gain from being renowned as centres both of learning and personal development of their students and their future careers.

Conclusion

The Lund experience with SI indicates advantages for the students and the university as a whole, both in terms of retention and quality of academic production delivered. Methods and models based on active student participation would presumably result in similar benefits, except the advantage of SI is that it is implemented as a supplement to traditional lecture-based education; it does not require a structural change of the education system. This factor contributes to its flexible yet direct implementation at the Faculty of Humanities and Theology, Lund University. Studies presented in this chapter have sought to measure the impact of SI both in quantitative and qualitative terms. Through the former, maintenance of SI meetings is shown to enable increases in retention and pass rates; not being a financial burden makes it feasible to implement within

[25] See Hiltmann (this volume, pp. 116-117) for effect of active student participation on enabling collaborative learning for subsequent professional life.

current budget limits, even implying a net gain in department ´income´.

At present, SI is being implemented at various levels and fields of study within some departments at Lund University. As a model for more active student participation, it is an interesting proposition for other departments and universities internationally, opening avenues to combining modern pedagogical research with traditional values of the academia university. Extrapolating into the future from our present experience, we envisage the possibility that SI may become an integral part of university education at all levels and all departments, and perhaps occur systematically even in secondary education. If this happens, we also expect that the clear boundary between secondary and tertiary education may become blurred, which may lead to a wider recruitment of university studies than hitherto. It is our hope that SI may contribute in various ways to making tertiary education accessible to everyone.

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How to make active student participation work in the long term

- A case study

Åsa M Larsson, PhD, Director of Department at Societas Archaeologica Upsaliensis

Introduction

At the turn of the 21st century, the Department of Archaeology and Ancient History at Uppsala University faced difficult challenges regarding student retention. As for several disciplines of the Humanities, there was a distinct drop in the number of students enrolled at the department, in particular regarding advanced levels. The impression was also that the quality of work, both in terms of factual knowledge and analytical reasoning, was lacking in standards of research. The reasons for the situation were various and complex, but what further aggravated the crisis was the dependence on student throughput, passing examinations, for the department's financial support, for example covering salaries of teachers. In addition, the humanities are compensated far less for each student than the sciences, since it is assumed that the former will offer courses more dependent on individual studies and literature than the latter. This meant that there was little opportunity to expand teacher-led education, even if there was felt to be a need for it.

In summary, the main challenges for the Department of Archaeology and Ancient History included:

- How to increase the knowledge gained and retained by undergraduate
- How to encourage more of them to continue on to avanced levels
- How to deepen the analytical thinking among the students on all levels, and most importantly
- How to do this in a manner that did not strain the budget.

During 2005-2009 I held a position as a PhD candidate at the Department of Archaeology and Ancient History at Uppsala University. In the first year I took a course in pedagogy for university teachers. At the course, I came into contact with the Supplemental Instruction (SI) method, which was implemented within the Science Faculty at Uppsala University, but only rarely used in the Humanities. It seemed to me that the method addressed several of the challenges the department faced. After putting together a proposal for the Board it was decided that we should try to implement it.

This chapter builds on the experiences from initiating SI at the department; it offers thoughts on why, after a promising start, there are to date problems with making active student participation a permanent part of the curriculum. This case study serves to elucidate what is required in terms of structural commitment and long-term planning to make active student participation in general, and SI in particular, last. See the Gillis and Holmers paper, among others in the anthology, for methodological underpinnings and contributions of SI; implementation is eminently easy in comparison to long-term development, and here is stressed the importance of at-

tracting and maintaining dedicated people for active student participation to endure.

Developing an initiative

Getting started: Diplomacy and compromise

The Department Board and teachers were open to my proposal for implementing SI on undergraduate courses, but some points of concern were raised. Firstly, senior staff worried that SI was not suitable for the Humanities in the way that it was for science and language. This was mainly due to SI, at Uppsala University, first being implemented on a broad-scale in the science departments. Pointing out that SI had first evolved within, and for, the Humanities helped calm some concerns.

A rule-of-thumb in pedagogy is to: think about what the audience needs, not what tickles your fancy; and, get to the point quickly. In the initial proposal less time should be spent on explaining the minutiae of the method, and more on what it can actually accomplish and why it would be a good investment of time, effort and money by the department.

The other concern voiced was who should act as mentors. My initial suggestion was that I would act as supervisor for master students who would serve as mentors for the undergraduate students. The proximity between master and undergraduate students would, presumably, enable students to ask "stupid" questions, arrive at answers themselves and increase collaboration among peers. But was it not a recipe for error to risk having master students acting as teachers for undergraduates? We might instruct the master students not to act as teachers, but would they be able to keep to those instructions? They had no previous experience themselves with question-based learning, which is the cornerstone of SI, and

might revert to a format they were more familiar with, i.e. lecturing.

As a compromise, all mentors for 2006 would be volunteering PhD students. This was still a good set-up for bridging the gap between undergraduate studies and professional research; moreover, the education system provided little teacher training for PhD students other than a few lectures. In fact, this was a source of irritation for both postgraduates and undergraduates. The former, including myself, wished to get more pedagogical experience and the latter felt they hardly ever got to meet the junior researchers. It is difficult for undergraduates to identify with professors who were rightly seen as great authorities. Having PhD students acting as mentors for undergraduates was a start for addressing the gap and gave the added benefit of getting students themselves into greater contact with each other.

The extent of the initiative regarded which undergraduate courses would be offered mentors. The department had three main undergraduate courses: Scandinavian Archaeology, Classical Studies and Egyptology. Since only Scandinavian Archaeology had enough PhD Students, this course was chosen for SI implementation 2006.

Implementing SI

Both the course itself and the methodology of question-based learning was challenging to undergraduate students at the Department of Archaeology and Ancient History. Within Scandinavian archaeology it had been difficult for lecturers to find a good balance between involving the inexperienced and challenging the experienced/gifted; the study experience varied considerably. In the Swedish school system, Scandinavian prehistory is mainly taught in the early years and pitched at a level to be understood by children aged 7-10. For students in Scandinavian prehistory at university level, most knowledge will be new; almost everything learnt in elementary school on the subject will be outdated or wrong. During the

first term, 10,000 years of prehistory, cultures, burial customs, climate periods and artefact typologies have to be crammed in pretty much from scratch. The students get maybe four to six 45-minute lectures a week at the most, and are expected to cover the rest through individual reading material.

Another challenge to address was the uneven training among undergraduates actively participating in the curriculum. SI elucidates individual responsibility for learning; further, it requires participation from all group members to verbally expose current limits of understanding, raise scientific problem formulations and reach satisfactory conclusions. It is a learning environment that comes naturally for some students. For others, it might be difficult to open discussion with people; most undergraduates within Archaeology are strangers to each other at the beginning of the course. In general, the biggest challenge at the SI meeting is to get the students to abandon the idea that they are in some way being taught, or being given an opportunity to interrogate a friendly senior for answers.

Six PhD students volunteered as SI mentors. The education and preparation was organised within the group, with the help of suggested literature, though most had also taken the course in university pedagogy that covered many of the basic tenets of SI. We decided that SI meetings would not be mandatory for the students, as that would raise the wrong expectations from them and be counterproductive to getting them to take charge of their own learning process. However, it was still important that SI be seen as an integral part of the course. It was impressed on the students that the department strongly encouraged them to participate. SI meetings were offered on average once every second week.

All in all 22 undergraduates participated in SI meetings, 18 of which answered the survey handed out after the first five-week course. The response was exclusively positive. More importantly, the students asked for additional scheduled meetings before the examination. To accommodate the demand, study rooms were prepared for afternoons, extra books and copies of old exam papers

were provided and a mentor stopped by intermittently to check in on them.

Given the success of the pilot in 2006, the department decided to continue with SI meetings for undergraduate courses in both Archaeology and Classical Studies. This time it was also decided to involve master students as leaders, as was the original suggestion, and that I would act as an instructor and supervisor. A junior researcher from that field handled the SI for Classical Studies. SI now involved every level, from undergraduate to postgraduate. In my opinion, one of the strongest advantages of SI is that it benefits far more than just the students receiving the instruction.

The students had an overwhelmingly positive view of SI, even when we took into consideration how many previous courses they had taken. Students with a lot of previous study experience were just as likely to rate SI 4 or 5 out of 5 as those new to the academy. It was clear that for experienced students, the SI meetings afforded them a chance to interact more deeply with the subject and discuss with their fellow students in a way that lectures would not allow. By offering SI as a formal setting for group studies, the department made the students feel welcome; a social bonus that should not be underestimated since it contributes to student throughput from undergraduate towards advanced levels.

Leaving room for improvement

The surveys of 2006 and 2007 left room for individual comments and suggestions. When asked what they liked with SI many mentioned getting the opportunity to ask questions; discuss anything that was confusing; getting a clearer picture of what was expected of them; getting to know one's course mates better; and lastly, to socialise with PhD or master students. Within the Humanities, education is centered on the individual, and many liked the opportunity to share this responsibility with fellow students, exchanging concerns and scientific questions.

The majority of undergraduates who had a mentor were content with the current set-up, but the methodology and training among mentors required further improvement. Students asked that mentors should to be more prepared for the meetings; a clearer agenda on what to cover at meetings. Some preferred more authoritative roles from mentors, and mentoring skills in general ranged widely among the volunteering master students.

The question-based learning of SI demanded good introduction and debriefing after meetings that served as supplementary training for the mentors, for example in handling group dynamics. As a supervisor I arranged these meetings, complemented with anonymous surveys.

What the SI mentors appreciated was:

- Contributing something substantial to higher education
- Getting to know the undergraduates better and department staff; including meetings with PhD students and junior researchers
- Learning more about pedagogical methods.

Negative aspects included:

- Feeling nervous and insecure
- Frustration when students seemed to demand an "extra lecture"
- Getting quiet students to open up.

Epilogue: Closing argument and recommendations

After initial successes, the organising of mentors for undergraduates has been on hiatus or practiced intermittently in the department. In 2008 I was finishing my dissertation and no longer had time to set up and organise SI. Despite positive feedback from the senior staff about what SI had added in terms of quality within budget limits, there seemed to be no one willing to step up and assume responsibility.

The reason for this was not that it had been unappreciated by staff; quite the contrary. The problem consisted in an absence of structure for active student participation within the department. It was never fully integrated into the department's educational organisation; SI had been the responsibility of a few dedicated individuals. The real benefit of SI will appear only after a few years, when mentors are recruited from among previous undergraduates who themselves participated in SI meetings. Due to the lapses in organising meetings, these positive long-term effects had to a large degree been lost. There is little knowledge of, or insight into, the implementation of SI in the department among either junior or senior staff. Thus, efforts for student activation are more of a nuisance than gain to staff since the momentum is momentarily lost.

All the more, I argue that departments, universities in general, must step up in the establishment of social learning environments and make room for more active student participation. To alleviate the challenge of shrinking student numbers within the Humanities, departments need to nurture a sense of community, with interaction across the different levels from undergraduates to postgraduates, to make everyone more committed to the education and less likely to drop out. I have studied several courses at different universities and have seen how important it is to feel included rather than excluded in order to persevere. There are many seats of higher education and many disciplines vying for students' attention. If we

want to ask students to invest their time, effort and money, all of which are substantial, it is important they feel that the department invests in them too.

SI is relatively easy to set up and eminently cost effective. It also brings beneficial side effects apart from helping students to study and retain knowledge. It can be instrumental in interaction among and between undergraduates, postgraduates and junior research staff. Apart from complementing the lecture hall, it is an inspiration to further studies at advanced levels. The SI mentors also benefit from developing pedagogical and leadership skills useful for professional life.[26] Students need to experience that their education contributes more to the department, and research as a whole, in a deeper sense than to the pocket into which government funding is poured upon course registration.

The department needs to implement projects for student participation in its educational organisation to allow time for development and assure that efforts don´t fizzle out. Since the work is largely carried out by students, the requirement for support systems is particularly important, for example recruiting and assigning people responsible for maintenance while de facto implementation is delegated to junior staff, i.e. postgraduates or amanuenses. No matter how positive and supportive in a general manner senior staff may be of a pedagogical project of the kind described in this chapter, there is always the risk of depending too heavily on a few enthusiasts who eventually move on.

Ideally, the decision to implement active student participation should be taken at a higher level, e.g. the Faculty. Regarding SI in particular, the organisational outline is pretty much the same regardless of institution and is practiced internationally; some aspects of mentor training could thus be administrated centrally, for example at the Division for Development of Teaching and Learning. It

[26] See Feldt (this volume, pp. 127-129), as well as Hiltmann (this volume, pp. 116-118), for examples of professional benefits from active student participation, in particular regarding the practice of SI.

would be easier to pool resources so that a few experienced and dedicated SI leaders can be in charge of overseeing the programme and educating new mentors. This would then entail very little in terms of money and time from each department.

Active student participation may be beneficial in more ways than helping students pass their examinations; it hones skills that are valuable in future careers, particularly for mentors and supervisors themselves. After I finished my thesis I have worked as an ombudsman and then as a Managing Director of a small firm. Experiences from pedagogical projects of activating students, group dynamics and conflict management have been of strong contribution to my career and in appreciating similar skills in employees. Speaking as a prospective employer, SI offers students and mentors alike an opportunity to develop and enhance skills valuable far beyond the classroom in making students more employable.

To sum up this paper:

- There must be a decision to commit to active student participation in the long term, and to factor this into the educational system
- Someone in a position of authority must 'own' the responsibility of the pedagogical project
- Senior staff must be informed what the project entails, for example the methodology of SI, even if they do not participate themselves
- The real benefit comes in the long term: having mentors that were themselves mentored, having continuous interaction between students of different levels.

The need for dialogue

- Coordination and networks for active student participation

Johan Gärdebo, Master student in Environmental History, Uppsala University

Introduction

The aim of this paper is to give an outline of how coordination and networks support active student participation. Initiatives benefit relatively more from coordination when considering that students' stay at the university is short in comparison to that of staff; as a consequence, recruitment, training and supervision need to be cost-effective, and conducted with ease. Coordination and networks aimed at supporting initiatives for active student participation will have to address these challenges if it is to be effective and meaningful.

This chapter develops on the experiences of the Mentorship Programme, a complement to ordinary education for history students of Uppsala University since 2011, as well as subsequent CrED-seminars[27], whose aim was to promote dialogue between similar initiatives. The importance of *structures* is discussed in relation to various types of coordination and networks for active student participation.

[27]Creative Educational Development at Uppsala University (CrED) is a university wide endeavour conducted 2010-12. Its aim is to stimulate further development of education quality at Uppsala University, making initiatives easily accessible to students and staff.

Background – the Mentorship Programme and CrED seminars

The Mentorship programme

A pilot project for active student participation was initiated for history courses at Uppsala University in 2011. The Mentorship programme was developed as a complement to ordinary education at the Department of History – and for History and Philosophy of Science and Ideas (Gärdebo, 2011). Senior students served as weekly mentors for undergraduate students and supported them in reaching syllabus goals; further, it allowed senior students to develop relevant generic skills, i.e. group dynamics and leadership. The initiative was student-led, although the need for institutional support and coordination was acknowledged early on in the pilot.[28]

Preceding the start-up in spring 2011 a variety of similar projects were consulted in order to learn from previous experiences, foreseeing and addressing challenges prevalent in initiatives where students held the central role. Advice and support was provided both by personnel within Uppsala University and from other universities. The Division for Development of Teaching and Learning (PU) provided meetings, funding of a pilot and consulting for subsequent development of the initiative. Particularly progressive on the topic was Lund University, where the methodology of SI had been adopted since 1994 to enable students to be a resource for each other's learning and as a complement to ordinary education (Bryngfors, Malm, Mörner, 2010).

There had been similar initiatives at Uppsala University as well; several predecessors to the Mentorship programme could also be found within the Faculty of History and Philosophy. These were successful in achieving satisfactory results for education quality, and appreciated by both students and staff. The reason few of them

[28] See Escobar (this volume, pp. 87-92) on other forms of mentorship programmes, in this case on the initiative of staff at the Department of Economy.

exist at present was that reproduction of organisation and administration was challenging when isolated to one department, i.e. recruitment and training of the active students, and appointment of staff responsible for supervision.[29] Most initiatives were unable to operate in the long term due to a combination of dependence on individual efforts, and having only limited contact with structural support at faculty or central level of the university. To further develop the Mentorship programme, this was a challenge that had to be addressed.

The CrED-seminars

During the evaluation of the Mentorship programme, CrED offered the possibility of hosting activities for Special Interest Groups (SIG), the aim being to support topics of common interest for students and staff within higher education.[30] The CrED seminars hosted in 2011 focused on elucidating challenges and benefits of active student participation and how students could be used as a resource in developing education quality. The participants of the CrED seminars encompassed students and staff from different levels of higher education, from undergraduates to vice-chancellors.

Speakers and participants came from several disciplines, universities and countries in order for a wide variety of experiences to be shared and as inspiration for subsequent meetings and collaboration. This latter point is worth emphasising since the CrED seminars illustrated that knowledge of initiatives, for active student participation, *within* Uppsala University had been limited so far. Projects had been running for years in some departments, even using similar methodologies as other areas of the university; still, the initiatives rarely exchanged experiences or met with each other. In hindsight, several initiators expressed that such dialogue would

[29] See Larsson (this volume, pp. 61-62) for examples that inspired the SI-initiative at the Department for Archaeology and Ancient History.
[30] CrED, homepage for SIG.

have been beneficial for the work effort of developing active student participation. Instead it was required to host the CrED seminars, with international guests from several English-speaking universities, in order for people from the *same* Swedish university to meet.

To summarise thus far, the Mentorship programme and CrED seminars elucidated the need for coordination and networks for active student participation. The coordination requested composed a central organisation and personnel responsible for making results and experiences accessible. The coordination should result in shorter timeframes for implementing new initiatives, forums for experience sharing and supporting long-term maintenance of initiatives. As an example, the Mentorship programme has, since the CrED seminars, received valuable input on its maintenance and since 2012 has been operating with increased support from its departments. The development is mainly that of structural support for its coordination and maintenance.

Reflections on coordination and network structures

Why is coordination relevant for active student participation, perhaps more so than for other initiatives within higher education? Here is an overview of the characteristics of efforts where students have a central role. Additionally, this is related to the origins of the academy, contemporary challenges and theoretical meaning of structures in enabling individual work.

The importance of dialogue within the Academy

Dialogue is a central value of the university, though for varying reasons depending on the historical period. From its beginnings in antiquity, Plato´s *Akademia* used dialogue, i.e. the early Socratic

method, as a means for enhancing learning. By refining the methodology of dialogue, collaboration and a sharing of experiences could be established between and among students and teachers (Ambjörnsson, 1997, pp. 101-103).

For higher education in modern times, dialogue requires students to think and learn from and among their peers, as seen in the Mentorship programme. But these initiatives are in themselves in need of dialogue within the university. Over the centuries, the university as an institution has grown in size, subjects and students. Dialogue, on an aggregate level, now requires coordination between the various sections of the university in order to enable information transfer and learning from each other's experiences.

Structures to enable individual efforts

Active student participation presents the university with new challenges regarding training and supervision of the students; this emphasises the relevance of ample structures to channel their individual work. But what structures are necessary to support new initiatives, and which of them make the university rigid towards innovations?

Meijling (2008, p. 70, 77) discusses how strong structures and strong individuals are compatible, rather than contrasting or in conflict, to each other. Structures are prerequisites for individual efforts to act upon and through. This is due to the long-term relationships that structures create for people to act within. Initiatives without supporting structures, or unable to generate them, are temporary; they rely on the charisma, or capacity, of their leading figures whereas structures are maintained over the long term within a organisation.

Students and staff who have worked with active student participation express a need for a responsible person, one who can inspire

and lead the work at departmental level.[31] The pioneering work of a few dedicated students and staff is not a substitute for structures at the central level of the university. On the contrary, individual efforts will be able to play a larger role *because* the structure is in place to support their work.

Development through facilitation of unpredictability

It is by facilitating unpredictability that structures remain innovative. The structures, e.g. coordination and networks, allow new constellations of cooperation, methodologies and experiences to blend and it is unpredictable, yet organised, meetings that the various initiatives can develop and whereby new forms of active student participation emerge.

Coordination serves to make initiatives cost-effective, as training of students and staff could be rationalised and results made accessible to decision-makers. This brings us to the question of what modes of coordination and networks are currently being used, or could be viable for promoting student activation.

Models and means to coordination

Coordination is developed from the present conditions of a university, and perceived as legitimate in relation to how well it harmonises with the current organisation. In some instances, methodology for student activation is developed centrally; at others, the endeavours are left to evolve organically at departmental level or among the students.

[31] See Andersson, R. (this volume, p. 99) on the role of a "champion" for new initiatives.

The case of Lund and Uppsala University

Lund and Uppsala University are used as examples for different forms of coordinating active student participation. In many aspects the two are more similar than different, and the differences tend to vary more within disciplines rather than between universities. Still, there is at present a difference in how student activation is organised, and the role of the central organisation in promoting it.

At Lund University, a national centre for Supplemental Instruction (SI) is responsible for coordinating the training of student facilitators and evaluating the results. The methodology is clearly defined and also used to advertise Lund University in the recruitment of new students. When introducing SI to new disciplines at the university, the faculties had a crucial role in advocating its implementation at departmental level, providing additional funding as incentive to the departments (Bryngfors, et al., 2010).[32]

At Uppsala University, the initiatives for student activation operate more independently and are seldom part of the same network. Although central divisions provide support for pilots, there is still need for a structural framework of active student participation. Lacking this, benefits and experiences gained at departmental level tend to stay there and the faculties have yet to develop incentives and forums for dialogue between the initiatives.

The main difference between Lund and Uppsala is the central coordination of initiatives for student activation based on a similar methodology. However, there are central initiatives at Uppsala University for activating students in each other's learning. Anders Malmberg, former dean of the Faculty for Social Sciences at Uppsala University, presented *laborative social science* as a means of developing student participation. Pilot projects of laborative social science permitted students more opportunities of working with the

[32] See Gillis and Holmer (this volume, pp. 47, 49-50) for details on the implementation of SI at Lund University, and the role of central organisation for long-term establishment.

course material and peers.[33] Another example of structural support for student activation is the problem-based learning used by the Faculty of Medicine and of Law in providing its programmes with education quality. To conclude, the university is in many aspects endorsing active student participation. However, addressed in this chapter is how initiatives for student activation can be coordinated in order to achieve their long-term maintenance, which is a challenge yet to be addressed on a structural level.

Networks for dialogue and coordination

One aim of coordination is to support dialogue between initiatives for active student participation. Establishing networks is a means towards this end and ensures that the structural support retains a voluntary character for its participants; decision-making is retained at the departmental or "grass-root" level.

Networks are maintained by their common cause, for example the central role of *students* in other students' learning. The motivation and incentives for implementing student activation may vary but as long as the network remains beneficiary to the participating initiatives, it will enhance the degree of dialogue between initiatives within the university. Coordination is thus responsible for maintaining the network, and remaining proactive in its development, even though the network itself is horizontal in its power structure; it deals with information and dialogue rather than decisions, so to speak.

The CrED seminars gathered initiatives and participants from different disciplines and universities in order to promote future collaboration, establishment and maintenance of active student participation. Though temporary in its organisation, it illustrated what could be achieved with more resources for organising higher education differently.

[33] See Escobar (this volume, p. 87) for how *laborative social science* was operationalised through peer mentorship.

The purpose of networks is primarily to connect initiatives at the same university; secondarily, to internationalise the university and reach out to others interested. It is of great importance and inspiration that initiatives from foreign universities are presented and connected to what is developed locally. But considering the magnitude of modern universities, there is need for elaborate coordination and networks *within* each establishment as well; it is essential to the university that its own initiatives are connected in a meaningful way to extend the reach of good results and learn the lessons of experiences from previous trials.[34]

Networks also facilitate unpredictability, interpreted in its progressive sense and flexible structure of members; participation, information and content changes rapidly and from this, unexpected meetings occur. It is through an organised unpredictability that a large degree of development potential is established for initiatives where students hold a central role. Indeed, students contribute much of this progressive uncertainty; students' participation in networks should be encouraged, for example as keynote speakers for the initiatives they are involved in. Among the elements remaining rigid within the structure is its basic maintenance, i.e. marketing, updates and accessibility of new and current initiatives.

Guidelines for coordination

It is the *access* to a supporting structure that makes it useful, the aim of coordination is thus to inform and support, rather than ordering and directing. This has several implications depending on at what level coordination is organised within the university. Despite various types and degrees of involvement, all coordination has one common cause for support: allowing initiatives to be cost-effective.

[34] See Andersson, R. (this volume, pp. 104-106) for other student-led initiatives that, despite promising results, were unable to acquire necessary support for maintenance within the department and faculty.

Support of the central levels

The central level of the university requires personnel responsible for updates and information on active student participation; administrating newsletters, invitations to seminars and workshops as well as updates of web pages are of relevance to highlight what is currently going on in each discipline. Pilot projects are initiated frequently, so the need for continuous updates of information is paramount to the present state of a university's efforts for active student participation.

Central divisions of pedagogical development are potential venues for organising central support and long-term maintenance of student activation. Of central importance is whether initiatives are able to prepare their active students with pedagogical training and methodologies. This service is currently extended to university staff in order to develop a teacher's performance. If senior students are to be used for improving higher education, should they not be prepared and trained as well? PU has previously arranged similar activities on an occasional basis and these could be organised as a routine service preceding the semester.

One purpose of central coordination is to acknowledge the ambition itself of developing active student participation, its related initiatives and methodologies. Since much work is done voluntarily, additional incentives and encouragement would be useful for their endurance. A concluding ceremony at the end of the semester should be arranged and dedicated to the students and staff involved in order to highlight their efforts. Pedagogical meriting in general is at present gaining ground in Swedish universities. This reform encourages staff to make careers in teaching and sends a signal of what is important within the university; pedagogical meriting could also benefit from ceremonial occasions, emphasising the development of higher education through supporting the active role of students in the process.

Incentives within the faculty and departments

Funding from the faculties is of central importance to the development of vital initiatives for active student participation. If the collegium funds its own departmental initiatives, it is plausible that efforts might address existing challenges and inspire other efforts in similar disciplines. Coordinators at central level should consult the faculty in order to support the production of funding proposals; however, the initiatives that request and receive funding need to be a product of the faculty itself.

The department interested in developing active student participation should appoint personnel responsible for developing and maintaining initiatives. Initiatives that are serious about their long-term development ensure that maintenance is allocated to someone rather than performed informally, e.g. by students or staff in their spare time. The people recruited for developing initiatives are drawn upon from the staff or senior students, i.e. amanuenses; the central aspect is that the responsibility is formal, recognised and rewarded. Spare time commitment, and dedicated people in general, are of course beneficial but the main requirement is that a structure is created for individual efforts to be channelled.

Summary

Coordination of active student participation is a means of stewarding what is already gained in terms of routines, and for retaining experiences from previous initiatives. Experiences from the efforts of implementing the Mentorship programme, and hosting the CrED seminars, illustrate the importance of coordination. By involving initiatives from several disciplines, universities and countries, with participants ranging from undergraduates to vice-chancellors, it was clear that a dialogue between various initiatives is beneficial to their development. At times, the longest distance lies within the modern university itself; in all its magnitude and

multitude of students, staff and disciplines there is need for coordination. It is by facilitating a structure for coordination that individual efforts for active student participation can endure, with its results and expertise made accessible to decision-makers and others interested.

The guidelines developed in this chapter emphasise the need for central levels of the university to be supportive and proactive in connecting initiatives at the departmental level. At the same time it is important that the faculty and departments provide incentives for its students and staff to develop initiatives for active student participation. A combination of faculty funding and allocated responsibility to personnel in the department is central to the long-term maintenance and quality of initiatives. This structural support is of particular importance to efforts where the students have a central role for day-to-day maintenance of initiatives. Indeed, it is what allows temporary achievements to be turned into lasting hallmarks of the contemporary and future university.

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III.
EXPERIENCES FROM IMPLEMENTATION

Experiences from a department-initiated project in active student participation

Sebastian Escobar, PhD Candidate in macroeconomics, Uppsala University

Introduction

The universities of the western world have experienced a quite remarkable change since the mid 1900s; a transformation towards mass-universities with increased numbers of both students and curricula (Altbach, 1999, pp. 107-124). Contemporary students come from various backgrounds, far from all being strictly academic (Scott 1997, pp. 5-14). The university has become a more pluralistic forum of student groups, cultures and traditions. Though the change has evolved over some decades, it continuously imposes new challenges on the university; how shall it adapt to this change and how shall it get all students to take their degrees?

The change is not only within the university. The society and labour market have also transformed. A university degree is not a rare exception anymore, but rather a necessity for several occupations, which half a century ago did not require it (Altbach 1999, p. 107). Furthermore, social and communicative skills are not less important than mere technological or subject specific knowledge. To meet these demands, and to prepare the students for future work life, imposes great challenges on the university.

In this chapter, I will discuss my experiences of active student participation; the challenges met and dealt with, and the benefits gained. It is my belief that active student participation, where sen-

ior students engage in younger students' learning, has several possibilities in coping with these challenges for present day universities.

Background – the project in the Uppsala University Economics Department

Experiences and data on which this chapter is based are drawn from a project on active student participation at the Department of Economics, Uppsala University, initiated during 2011. The central aim was to achieve some of the education goals set by the department by enabling senior students to actively participate in other students' learning, in the role of mentors. Several authors of this anthology have elaborated on the methodological principles used for other initiatives on active student participation. In this project, the only requirements were for the mentors to prove mastery of course content by retaking examinations before starting their term as mentors.

The department itself initiated the project in order to evaluate the effects of undergraduate mentorship on students' examination results and retention rate. Preparations were made in the spring of 2011 and it was launched when the autumn semester started in September. Eight students participated in the project and held seminars with A-course[35] students once or twice a week. Besides seminar activity, the mentors also supported the students by being available for additional questions regarding studies, especially in conjunction with examinations. More details regarding this will be presented later in this chapter when relevant to the main subject.

Both goals of passing examinations and applying to advanced levels were important, but perhaps more so the latter for the department. Many students taking the A-course in economics do so for one reason; it is mandatory as a part of the bachelor programmes in business and political science. I believe that many of

[35] "A-course" refers to introductory level according to alphabetical ranking of courses, from introductory to more advanced levels, within a discipline.

these students have limited knowledge of what economics actually is when they begin to study the A-course. The social science of Swedish secondary education generally does not include economics, and the students' intention is often to pass the course and then continue their studies specialising in political science or business. The low portion of A-level students that continue to the B-level supports this notion; out of 300 A-level students only about 60 continue to the B-level. Economics is an alternative specialisation in both programmes. Hence, one possibility with the active student participation project is to give students, with a newfound interest in economics, an opportunity to discuss such issues and thereby learn whether this may be a subject more suitable to them than they had first thought.

As mentioned, the project was initiated by the department and not by the students. This has several implications. The department was very supportive with regards to finance and lecture rooms. It also has the organisational capacity to cope with a project of this size, engaging almost 300 students. This enabled the mentors to focus on the seminars.

Did the involvement of the department limit us, the mentors and actively participating students? In some aspects and to some degree, this was so. For example, the department prepared all material for discussions and seminars; however, this was never perceived as a problem in this project. Instead it gave structure to the project and facilitated its execution. The mentors were also free to compose their own questions, in discussion with the teacher. Good communication between the mentors and the department is essential here; all efforts must strive in the same direction.

The main challenge of active student participation

Rather simplified, all challenges in active student participation can be summarised into one: to get students to participate in the project, both as mentors and students attending the course. Students participating imply that the activity is rewarding; that the students learn and enjoy the project. Thus, participation is the most certain indication of success. This, however, is no good account of the challenges, at least not a practical one, because the most important question remains: how should we get the students to participate? Or, put differently, how should the programme be designed to make it beneficial to the students?

Let us start with the students. We worked hard to engage them in the project. The goal was to get all students to participate in the seminars and the results were good; of the 250 students who answered the course evaluation form more than 50 percent stated that they participated in all or almost all seminars, whereas only 8 percent said that they did not participate[36].

How was this accomplished? There are three important aspects to consider: presentation, content and form. I will discuss the presentation separately and the content and form jointly, as the latter two are closely related.

The presentation of the project

To present the project we, the mentors, introduced ourselves on the first ordinary lecture and explained what active student participation is. The class was then divided in groups and the seminars were put on the ordinary schedule. This had practical implications, such as clarity in when and where the seminars where held.

[36] These numbers are from the autumn semester 2011.

Deliberately, we chose not to call them voluntary. Of course, they were non-mandatory, but so are the regular classes. Thus, a name was carefully chosen for the seminars, avoiding words such as extra or complementary, because we did not want it to be seen as a something only to attend if one needed extra help. We wanted it to be perceived as a forum for practice and discussion of economic problems. Cosmetic it may be, but I consider it important not to be overlooked; the presentation affects the students' expectations of the seminars.

Content and form of the project

The presentation is important, but if the seminars are not beneficial or stimulating to the students, they will only show up once. An important question is thus: what shall the seminars contain and what form should they take in order to be stimulating?

It depends on the subject, but it is crucial that the seminars are a complement to the ordinary lectures. They should have the same content, but present it in another form. This project of active student participation has several advantages in providing an opportunity to alternative approaches to ordinary education and lecture material. At the Department of Economics this alternative was seminars, where students could use economic theory to solve problems.

The importance of the mentor also being a student should not be overlooked. It encourages questioning, as the students consider the stakes to be lower than when asking a professor. The solving of economic problems were part of the course curriculum before this project, but it was something that students had to engage in on their own and indirectly, for example by assignments. The discussion offered by the student-led seminars has benefits as a pedagogical method as it allows the students to immediately signal if there is something they do not understand and the focus of the seminar can be shifted to issues that require extra attention. These discussions

among peers were very much appreciated by the students and I believe the opportunity of students helping students has been the project's most important contribution.

Regarding the form of the seminars, group size is very important and there are means to maintaining optimal conditions. The larger the group, the more it resembles a regular class or lecture rather than a seminar and impedes the possibility for discussions. We tried to limit the size of seminar groups but this was not always possible. A general approach, tried by several mentors, was to hand out problems for the seminar participants to solve in groups. Then, after some time, the groups discussed their way of solving the problem with each other. This is a convenient approach in differentiating the seminars from the regular classes. The important thing is to find ways to encourage discussion, even if one as a mentor does not have the privilege to hold seminars in small groups.

The mentors

It is useful to briefly describe the mentors in the project, what role they played and how they were recruited. The mentors worked mainly as seminar leaders. One of the great benefits of using older students is that they have studied the course recently and easily remember what they themselves found difficult. Because of this, the mentors can prepare the seminars and present the material in accordance with their experiences as A-level students. As mentioned, the department prepared the material for the seminars, but the mentors had some freedom to further develop to the material used.

The recruitment of the mentors began during the preparatory spring semester, when the department informed all its B and C-level students of the possibility of becoming a mentor. More students than there was capacity for applied to become mentors. Thus, selection was made through a test on the knowledge of A-level economics. This selection method has both positive and nega-

tive aspects. By testing, it is possible to attract the most ambitious and proficient students, but there is also a risk of recruiting mentors with less understanding of what under-achieving students find difficult. In order to receive indications of the applicants' pedagogical skills, the test was designed in a way that gave room for expression and discussion. For example, test questions were of the type "explain what this is?" My general view is that we managed to find students well fitted to be mentors for the first semester of the project on active student participation.

Some mentors could not continue the second semester of the project so recruitment was once again necessary. This time the procedure was different and the mentors were instead recruited on recommendation from other mentors. This is better in one way, as it gives an indication of the person's tacit knowledge of expression and pedagogy, not merely in factual terms regarding the discipline economics. Still, the initial recruitment procedure was sufficient when the project was new and no mentors could give recommendations.

The benefits

What are the benefits of active student participation? The question has partly been answered by the previous discussion, but there are some additional things to stress:

1. Complementary activity – students' individual needs
2. Discussion and instant feedback – improvement of courses
3. Exchange of experiences – mentors as role models
4. Development of generic skills – leadership and communication
5. *Alma mater* – retention at the specific university.

Firstly, the project on active student participation gave more room for complementary explanations in addition to ordinary lectures. As mentioned, not all students learn the same way. An ideal would be to give several seminars, with different kinds of pedagogy so that there is something that suites every student.[37]

Secondly, student-led seminars facilitate discussion where individual knowledge gaps are revealed and adjusted. Some aspects of this are worth emphasising in particular. With communication between the mentors and the professors on the course, the seminars are a great forum for response and feedback on the students understanding from ordinary lectures. During seminars and problem solving exercises it soon becomes clear to the mentor what parts of the ordinary classes the students find difficult. This serves as direct input into improving ordinary education and should be especially beneficial if a new course or set-up is used when teachers are still struggling to find a suitable structure.

Thirdly, it creates a contact between younger and older students. As mentioned at the beginning, student groups have changed and support is needed not only in studying and passing examinations, but also in understanding the university as a cultural environment. This should make students more comfortable in continued studies to advanced levels.

Fourthly, mentors benefit the most from projects of active student participation. Besides the obvious merits for CVs and economic compensation, being a mentor enhances personal development. You never learn anything goods well as when you have to explain it to others. But still, the main contribution to mentors is in more generic terms.

A mentor gets to practice social and communication skills, mastery of which is highly sought in today's labour market, as mentioned earlier. Leadership of seminars and problem solving makes for a better listener. It demands paying attention to the other stu-

[37] See Andersson, S. (this volume, pp. 20-22) for discussions on different methods for active student participation.

dents, and conducting a discussion improves several qualities that make a good leader. Also, for an economist at least, much of one's future work life will involve explaining theories and complex phenomena in a comprehensible way. This is what a mentor has to practice every week, as was required by being part of this active student participation project.

Finally, there are several benefits for the university. This project is part of a departmental study on the effects of active student participation and is still being conducted. Results are therefore preliminary, perhaps even being indications at best. For example, grade improvement is yet to be evaluated. But we know that the students have been very positive and grateful for the opportunities the project provided them. Also, after one semester with the project the number of applicants for the B-course increased by approximately 80 percent. If active student participation can achieve this, it is most certainly beneficial to the university's ability to remain competitive.

Concluding remarks

I would like to conclude by reconnecting to the introduction in seeing what active student participation may contribute to contemporary universities. It is important to remark that it is not a completely new phenomenon. Students had a role in teaching already in the medieval university system, where the difference between teacher and student was much less defined than today. Furthermore, discussion as a way of learning dates back longer than the university itself. Plato wrote his works as dialogues, and discussion was *the* way to achieve knowledge in those times.

Have modern universities lost this trait as a means of sharing knowledge? Discussions are time-consuming, can only be held with a few people at a time and are therefore costly. If the goal is to educate great quantities of students, lectures given by a teacher to

large audiences of students is most cost-effective. This is where active student participation is most beneficial, as it provides possibilities for complementary discussion and learning. By doing so it helps the students to pass their examinations and the mentors to prepare for their work life. Using students in each other's learning contributes to the university in coping with new challenges and simultaneously re-establishes its foundations on learning and knowledge.

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Relevance of active student participation in a context of high-achievers

Rebecca Andersson, Certified Psychologist, Trained SI-Leader, Uppsala University

Introduction

Originally developed in the US during the 1970s, Supplemental Instruction (SI) aims to increase the performance and retention of students in high-risk classes and among students with non-academic backgrounds. SI makes use of peer-assisted study sessions, facilitated by senior students within the discipline. In spring 2007, I started as a student in the psychologist programme at Uppsala University. Admittance to this programme is highly competitive in Sweden; an educated guess is that over 90 percent of these students are from academic backgrounds. Attrition rates for individual courses are very low, as is general for the whole programme. Why, then, did my fellow students and I feel the need to initiate SI in the Psychologist programme? I will address this question together with my experiences of how SI can be implemented in varied contexts. Finally, I will also say something about what the vital factors are to make the programme sustainable.

Choosing a practically oriented complement to ordinary education

I had high expectations for learning opportunities at the start of my studies in the Psychologist programme. I looked forward to working together with my classmates to understand the course material in a profound way: comparing different theoretical perspectives, integrating different views on the same topic, and evaluating the knowledge we were presented with in our lectures. Unfortunately, some of the lectures given during specific courses in our first semester were too narrow. It was challenging to understand, and little was explained of what relevance some subjects had for our future profession. We spent time memorising facts to be recited during exams. My classmates and I were quite disappointed. We shared our thoughts to the department's Director of Studies on how to improve the courses and make studies meaningful. After hearing our concerns, she lent us a manual for SI.

We learned that SI was an academic programme that complements ordinary education with regular, extra-curricular sessions, facilitated by peers. In the sessions, groups of approximately six to eight students are encouraged to review course material, share learning strategies, and develop teamwork abilities. Another advantage of the programme was the opportunity for senior students to develop leadership skills as session facilitators. The SI model was appealing on many levels. We sketched out a timeline for implementing SI for freshmen entering the psychologist programme. Thirteen students, including myself, decided to take on the role of facilitators to assist the next year's freshmen. Our goal was to improve the course, making it more relevant to the first year students.

Very briefly, there were three things about SI that we found interesting for the Psychologist programme:

- An underlying theory behind SI is constructivism. Swiss psychologist Piaget, who developed a theory on human cognitive development, inferred that "students must 'construct' their own knowledge to be able to understand and use it" (Arendale, 1993, p. 3).
- SI makes use of the Zone of Proximal Development (ZPD), a concept developed by Soviet psychologist Lev S. Vygotsky; "the difference between what a child can do independently and what the child can do with assistance from adult or more advanced peers" (Passer & Smith, 2004, p. 386). The facilitator helps the junior student to operate mentally on a higher level through interaction with more capable peers, thus extending their level of thinking (Arendale, 1993, referring to Vygotsky 1978). The facilitator is often the most competent among the students participating in the SI meeting, but their understanding might be challenged by a comment or a question from one of the junior students, which stimulates new learning and better understanding.
- SI uses question-based learning, the focus being on knowledge gaps and re-evaluating previous understanding of a subject. This is the acquisition of a general learning competence that is of importance for subsequent professional life (Ning & Downing, 2010, pp. 921-939). Among peers, I believe that high-achievers are often reluctant to thoroughly investigate what they do *not* understand, this being an obstacle to obtain higher understanding. Establishing a safe environment for discussing and processing course

> material was thus a complement to ordinary education that we as students felt was necessary to improve our learning and the Psychologist programme as a whole.

One of the more valuable outcomes of higher education for a graduate is the acquisition of a general learning competence. As important for the working life awaiting the newly graduated student, is the general learning competence, such as attitudes towards, and methods used for, learning. SI has an impact not only on academic performance, but also on this type of competence (Ning & Downing, 2010), and I will argue for this line of reasoning.

Far more than a set of techniques, SI is developing an attitude towards learning which encourages students to take a more active role in their own education. In between meetings, the student is encouraged to become independent and a proactive learner. Those of us who took part in this training found our studies in group psychology and social psychology very valuable. SI provided a way for senior students to use theoretical knowledge of psychology in a practical context within the university itself.

Implementing a methodology for active student participation

Since key figures at the department were positive to student participation, and had experience of SI methodology, a pilot could be initiated in the following semester, autumn 2007, for the introductory course of the programme.

Implementation at the department went smoothly mainly because communication was regular and course teachers were informed on how SI meetings could benefit their courses, i.e. influencing what parts of the course were suitable for discussions at SI meetings. Subsequently, no meetings interrupted ordinary education. In general, the aims of the meetings were to improve the use of study techniques and provide a chance to practice student lead-

ership. The Director of Studies was continuously updated on the preparations, assuring that no additional administration was required on her side.

Central to implementation was a flexible schedule for training in SI methodology. This was set up by pedagogical contacts among the departments that brought us into contact with Muhr, who offered supervision and training of SI leaders, e.g. senior students facilitating the SI meetings.

The sustainability of active student participation

Here I will discuss the experiences from implementing active student participation in relation to studies conducted on the subject. What is to be identified is a set of factors central to the sustainability of SI in particular.

Zerger & Smith (2006, p. 68) outline how active student participation in SI can support students as well as the faculty and the institution itself; "One of the underlying questions for the survival of the SI programme […] is its sustainability". Identified is a set of factors central to its sustainability.

Coordination among students and the department

According to Zerger & Smith (2006, pp. 63-72), a crucial component for the implementation of SI is that a credible *champion* is appointed for maintenance. In the case of the Psychologist programme, I took on the role of champion, e.g. coordinator. When my studies became more time-consuming, another committed SI leader, Madelene Johansson, organized the programme. When faced with her own time constraints, the programme was unable to find a substitute for administration. As a consequence, despite being appreciated by students, SI leaders and staff alike, there is currently no programme running for active student participation with-

in the Department of Psychology.

The role of a coordinator demands a lot of time and effort. For most students it is not possible to dedicate the time required to administrate an effective programme in active student participation. This task demands cooperation with the department itself.

There may be a champion among the students, but there is a need for an administrative, preferably pedagogical, figure in the department itself for longevity to be achieved. Students are best used for holding meetings, marketing and recruiting group members and prospective SI leaders. But I believe that it is vital for the sustainability of SI that someone who is actually *employed* at the institution coordinates the programme, for example a doctorate student.

Funding and evaluation

Central funding is important for providing quality to a pilot in active student participation. Regarding SI, previous studies have shown that investments are covered due to the amount of students passing examinations as a result of SI (Zerger & Smith, 2006, p. 69). Uppsala University had sufficient in-house human capital to provide initial training of senior students for our pilot. But in the long run, active student participation requires financial endorsement of the department, faculty or other central funds, to uphold its quality.

We made use of written evaluations for students participating in SI and also arranged a meeting with our supervisor, Muhr, the course director, and the department's coordinator of SI, as well as some SI leaders. These occasions were useful for discussing ways to bring about improvement in practice, for example number of sessions, what focus we should have for our SI sessions to complement the ordinary education in the most optimal way. What we also should have done was to collect data, indicating a correlation be-

tween students participating in SI and grading.[38]

Benefits for active students and goals of higher education

Working with active student participation must remain rewarding for the students who are responsible for its day-to-day maintenance and quality. In this case, both the students acting as SI leaders and those participating at meetings belonged to a group of high-achievers. Motivation was strong since training for them was rewarding and ensured development of generic skills.

Elmgren and Henriksson (2010) discusses SI in relation to student activation and the benefits it has for generic skills, i.e. problem solving, critical thinking, teamwork abilities. They are generic because they are transferable; what is learnt in one context can be used in another. Arendale (1993, pp. 19-26.) states that to teach methods of teamwork is to train students for the "real world", whereas ordinary education to a large extent still hails individualism to the point that it discourages cooperation.

Developing generic skills was of benefit both to senior students and the Department of Psychology in fulfilling the generic goals of the syllabus. The SI meetings practiced cooperation due to its focus on questioning, problem formulation and decision-making; the reliance on individuals' contribution to a collective process of learning demands a capacity to work together. There was a high demand for developing these skills among our senior students, and the department could accommodate this by financing our training.[39] In turn, the department could later graduate students who had more practical training, generic skills and preparation for professional life than what is ordinarily seen in the Psychologist programme.

In my present, and presumably future, work as a psychologist, I

[38] See Gillis and Holmer (this volume, pp. 45-46) for data and results of SI on student retention.

[39] See Jacob and Rabie (this volume, pp. 155-159) on incentives for using students to improve higher education.

have experienced that many of my practical applications of my education came through working with other students in student activation. This is valuable to me when working with colleagues and patients, and a generic skill I believe the university would do well to take responsibility for developing further.

Summary and conclusion

The case of SI at the Department of Psychology shows that active student participation could be implemented and meaningful in an environment of high-achieving students, and that the awards were several. The choice of SI as a method for the project was due to its theoretical foundations based on psychology, pedagogy and sociology and allowed the programme's senior students to practice theories previously studied during the SI meetings.

Despite being appreciated, the SI meetings abated after 2008, which raises questions as to what constitutes the sustainability of an enterprise dependent on students for day-to-day maintenance. Both implementation and long-term maintenance requires a coordinator, located both within the department and from among the students. Central funding must be secured, which in turn requires continuous evaluation and indication that efforts are improving courses and the syllabus aims of the department.

What is also important, especially in an environment of high-achievers, is that the effort of active student participation is beneficial to the students dedicated to maintaining its quality year after year. Training of senior students into SI leaders was crucial in creating meetings with an open learning environment. This is one of the keys in creating cost-effective complements to ordinary education by using students; part of the students' reward is in fulfilling goals of the syllabus that either way they are expected to learn. The challenges of active student participation are, as of present, yet to be addressed at Uppsala University.

In this century, we have left the view of the "Great Leader" in

favour of team-working organisations. Group endeavours increase productivity, quality and satisfaction of work; learning how to constructively question leads to better decision-making. Having been a facilitator for active student participation, I now appreciate the process of learning and working with people with different knowledge and perspectives to that of my own.

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IV.
LEADERSHIP AND PROFESSIONAL LIFE

Collaborative learning in higher education and professional life

Linda Hiltmann, Department Associate at Raoul Wallenberg Institute, Lund University

Introduction

This chapter discusses one methodology to activate students, Supplemental Instruction (SI), and it elaborates specifically on the collaborative learning aspect of SI. Collaborative learning in higher education is related to subsequent usage in professional life. My argument is that group work requires strategies and keys for efficiency; this has different criteria depending on whether used in higher education or professional life. Still, the skills required from collaborative learning at the university can and should be used for enabling a more effective and meaningful professional life. I would like to stress that this chapter is an illustration based on anecdotal experiences, rather than studies, of collaborative learning; analytical points are drawn from leading and working collaboratively among professionals.[40]

[40] I will make the following distinctions concerning collaborative learning/leading and work: *collaborative learning* is something that students experience in groups led by a facilitating student, in this case referred to as an SI leader, trained in *collaborative leading*. In the professional setting we then move from collaborative learning to collaborative work/working collaboratively. This last distinction is mainly made to illuminate the change of setting, from educational to professional life.

Collaborative learning and methodology within higher education

The impact of collaboration: an illustrative discussion

During a conference in Phnom Penh, Cambodia 2011, I realised the importance of training students in working collaboratively. I had held a seminar on human rights and used SI as a means for enabling more collaborative work for students from all over South Asia. Later at dinner discussions, we discussed the relationship between studying and working collaboratively. I thought it strange that students rarely practiced methodologies for collaborative work since a growing number of professions today require it of its employees, and suggested that its practice should be integrated to a larger extent within the academy.

Gina, a participant from the University of Philippines, nodded enthusiastically and concluded:

> - Well, Linda, you must have been really fond of collaborative learning during your university education!

My instant reply surprised me:

> - No, I was not!

On the contrary, as soon as "team work" or "group activity" was on schedule I considered it, at best, a necessary evil; feeling it was more time-consuming than beneficial. My change of heart for collaborative learning happened only after I and other students were required to use a methodology that relied on students learning from other students; in Lund this work has mainly been done through the implementation of SI in various subjects and in several departments.

Methodology and training for collaborative learning

When collaborative learning is presented and practiced as a method, and not simply an "approach" to learning, it enables participants to assess and improve its usage. Structural support is required to train and develop the methodology, not least because most other academic efforts, i.e. examinations, are individual endeavours and we tend to focus on what the individual should do, without considering what the individual can achieve if able to do it with others.

The training of SI leaders, the students who facilitate collaborative learning, is necessary for group meetings to be structured; the role and responsibility of the SI leader concerns many aspects (Martin, 1996). In preparation to be an SI leader, it was the first time I as a student had been *trained* how to use study techniques, and how group dynamics work. At the same time it felt natural, as at that time I had studied for a while and wished to contribute to other's learning. The SI leader is typically a senior student, thus being a link to subsequent stages in university life for those new to the academy.

Achieving collaboration in the SI methodology depended on the following criteria: mutual dependence, having a common goal and agreed upon strategies for pursuing it; member support, stimulating each other both with assistance, encouragement and sharing questions; individual responsibility, self-studies are prerequisite for results to be fed back into the group; responsibility of the SI leader, whereas each member is required to participate, it is the facilitating student's responsibility to establish optimal conditions for a learning environment (Martin, 1996, p. 61). In SI, this is utilised by redirecting questions back to the group, and supporting the students in questioning their results and using each other's learning to reach conclusions. This way the collaboration makes use of the group dynamic. Preparation of the meetings is essential for this approach to be successful; developing an idea of how the group works, and what you might achieve with your questions, is central

to making the meetings beneficial to its participants, and to making the role of facilitator legitimate in the eyes of other students (Bryngfors, 2009, p. 96; Martin, 1996, p. 32-38).

What does a meeting look like?

How are these elements of collaborative learning implemented in a meeting? Here is an example. The group of eight history students assemble as usual in one of the seminar rooms on campus together with their SI leader. The tables and chairs are organised facing each other, some snacks and extra literature reside in the middle. The meeting starts with a check-up on how people are feeling and what they have thought about; gradually the SI leader starts asking questions related to the course and syllabus goals. At some point, *silence* enters the room. Time is given for the students to overcome the barrier of asking for help. Eventually someone asks:

> - Hm…I do not really understand the chronology of the First World War and the causality between events in different states.

The SI leader confirms the question and redirects it to the group along with instructions:

> - Thank you Marcus, I would like you to write the question on the board. Make a preliminary timeline with beginning and end dates.

The other students are encouraged to support Marcus in the choice of states relevant for the First World War. When done, the students team up two-and-two and work on a chosen state for 15 minutes. Both information, and question marks are noted for the subsequent analysis of the timeline. When the 15 minutes are spent, the teams' efforts are connected for analysing the question. If one of the students is interrupted or uncomfortable with speaking in large group, the SI leader holds up the discussion and asks for her/his opinion specifically, i.e. what the student considers important about what

has been said so far.[41] Once done with this initial round, a new set of questions have been generated. The SI leader asks the group to rank these in perceived importance before the work continues anew. Eventually, the meeting draws to an end and the SI leader asks for a summary on the day's questions: how were they answered, what should be focused on for the next meeting, and when is a good time to meet?

This meeting serves as an example, rather than model, for how the SI leader guides a group in operationalising questions and study techniques. It is a process of collaborative learning that is open to individual capacities so that those new to a subject are trained in asking questions relevant for the discipline; students who are knowledgeable are encourage to formulate what a topic is about specifically, thus practicing to explain complex concepts for their peers. The ability to formulate a question that corresponds to the need for more knowledge is a central part in becoming a successful learner – to be able to identify what you do not understand and participate in discussions in order to develop that knowledge. For those who think they understand a subject, collaborative learning is relevant for formulating those answers intelligibly.

The SI meeting is facilitated so that all students on a course are able to participate. The students are often strangers at the beginning of the semester and might not have made acquaintance had it not been for regular SI meetings. But once they are in this academic social forum, they are able to see other perspectives on topics and knowledge that they otherwise might not have approached due to prejudice, or simply not talked as much to other students on the course. It is not the intention of SI meetings to ensure that all students at the university have friends, but they do emphasise humility and respect towards those different from you, and that collaborative learning can be successful with people that you otherwise would not spend too much free time with.

[41] Sometimes the students simply have to hear their own thoughts spoken at a meeting in order to get going and contribute.

Collaborative learning in professional life

In professional life, though it would be of vast benefit to the effort and enjoyment of working, most people are not prepared for collaborative work. Rather, individuals tend to promote their own agenda and more or less consciously override the ideas and suggestions of others. The idea of collaboration is there, but few have actually experienced it let alone been trained in it.

As a SI leader, you learn instead to facilitate the meeting so that interaction is maintained to the maximal extent *without* your direct involvement. And when doing so, it is to enhance the perspectives and complexity of competences in the group; when discussion takes a new turn and participants request new methods for utilising the course material. In this case the SI leader needs to abandon the initial plan and be open and ready to facilitate a line of thought previously not prepared for. In short, SI leaders learn to be flexible to the needs of their peers (Gillis & Bryngfors, 2009, pp.150-154).

My experience of seeing and valuing different characteristics encourages me to actively look for a diversity of skills; heterogeneity of learning styles and skills facilitates collaborative work and results. When part of a project, I actively relate myself to the diversity of my colleagues and the type of learning and performing personality they express: who is capable of formulating the relevant, or perhaps the provoking, new questions? Who will identify the possible problems ahead? Who is the doer in the team? The person who is quiet at meetings but has a really good way of describing how to change and use the new webpage might actually be the best person to give a presentation on the topic for target audiences. Being aware of different capacities of individuals and the workplace itself has on occasions given me the role of mediator for projects; this requires that you perceive the work both as a manager and an employee. The relationship is similar to that of a teacher and students.

The interpersonal, social aspect of collaborative learning made me aware of the importance of enabling colleagues to feel comfort-

able; when a group, such as in a workplace, is relaxed and open its participants will most likely be more inclined to listen, be responsive and also work together. Humans are people, not professions. If we are acknowledged as individuals with a personal life that to varying degrees impedes on professional matters, employees are then encouraged to be relaxed and honest towards colleagues. To lead a group demands the ability to utilise the different capacities of its participants, seeing each person precisely where they are at the moment. Having the formal leading position does not guarantee that a person knows how to lead a group, let alone how to lead a group *collaboratively*.

Challenges for collaborative learning in professional life

Two main challenges for collaborative work in professional life need further emphasis before concluding this chapter. Firstly, there are usually only few, if any, actually *trained* in working or leading collaboratively. Work projects often have the intended goal to work collaborative but rarely succeed. The reasons for this can be various and have to be identified particularly, but one conclusion is that without a common understanding of why and how collaboration is important it will be difficult to get a team to work collaborative. To have a common goal or aim does not guarantee that the group knows how to get there together. My own experience of this is illustrative as I realised the full impact of collaboration only when I was trained with tools and had to practice and ponder the idea and framework of collaborative learning.

Secondly, an obstacle for turning *collaborative learning* into *collaborative leading* lies in the difference between being a student and being a colleague. The neutral role of the SI leader is compromised in a situation where collaboration itself is not the goal. It is far more suitable to use the skill for directive positions or modern management, which focuses on collaboration rather than hierarchical decision-making routines. Despite this discrepancy I deem

the skills learned through facilitating SI meetings have been of benefit in a professional context and in others parts of life.

Conclusion

For collaborative learning to be meaningful, training in relevant methodologies is required. All participants should have an awareness of key aspects for group dynamics, such as mutual respect and dependence, and acquire tools for identifying different perspectives on the topics discussed. The SI leader is trained in several aspects of collaborative work and gets to practise and develop the skills necessary for developing a sound group environment.

If students are trained in and practice collaborative learning at university they will be better suited for valuing different professional capacities and accepting their colleagues as people. There are challenges towards adapting these methodologies for professional life. My personal experience has so far shown that these can be overcome, though the role of the SI leader is preferably translated into what is currently performed by modern management in coordinating efforts rather than hierarchical steering of the organisation.

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Can student leadership programmes contribute to the forming of agile professionals?

- Experiences from Medical School

Kari Feldt, trained SI leader, Physician at Capio St: Göran Hospital, Stockholm

Introduction

In today's evolving corporate and academic worlds, teamwork and bottom-up management philosophies are gaining momentum. Organisations require agile professionals; efficient, adaptable and competent employees able to cooperate and see each other's part in a work process. The forming of these agile professionals is partly done through new learning activities that are *student activating*, and often *student-led.*

This chapter elaborates on the benefits and limitations of student leadership by highlighting leadership experiences from a Supplemental Instruction (SI) programme within the Faculty of Medicine, Uppsala University; additionally, by exemplifying how student leadership programmes may provide groundwork for leadership beyond the university itself.

Background

My first encounter with student leadership was in 2003; I was halfway through my studies when SI was implemented in Medical School. A handful of senior students, including myself, participated in its introduction at the Biomedical Center in Uppsala.

Until this stage in my education, there had been little contact between the medical science and the practical reality of applied clinical medicine. Motivated to fill this gap with integrative knowledge, my peers and I were attracted by the thought of moving from a receptive student role towards a more active participation in our formation to medical professionals. The SI initiative promoted in-depth analysis of the theoretical field, and prompted our hopes to discover hitherto latent competencies.

Supplemental Instruction

The idea of senior students conducting question-based study sessions, rather than lectures, was appealing. Catalysing the group to ask ever-smarter questions, providing guidance and support, seemed more intriguing than simply providing *the* answer. The first seminar on Supplemental Instruction turned out to be an eye-opener. Our involvement in issues of curricula had thus far been scarce, but now we were introduced to a new paradigm of thinking on education.

A landscape of innovative potential surrounds the SI methodology: students who attend the groups may deepen their understanding of learning; student leaders may grow in group leadership skills and self understanding; supervisors and faculty may learn new experiences from the dynamics and – provided they are receptive – receive valuable feedback on curricular and pedagogical matters.

Student leadership training

The initial leadership training in SI prepares the future student leaders in a variety of ways to handle scenarios in a group: how to gather the group around a common goal; how to activate the silent student or moderate the verbal ones; how to deal with frustration; how to evaluate the meetings or use the group's time efficiently.

How this training is carried out varies according to the country and university where implemented. In the case of Uppsala University, ten students attended a three-day intensive leadership course outside of Stockholm: five medical students, three physicists and two historians. We took turns exercising group leadership on anything from nuclear physics to the role of sesame oil in the Japanese kitchen. Thus we experienced the difference between leadership on one hand, and the mastery of technical or theoretical knowledge on the other. In between the simulated SI meetings, we learnt about various pedagogical tools focusing on student activation.

Our peers in Law and Business School had received much practice in teamwork since the beginning of their education. In contrast, it was only half-way through Medical School that we medical students were offered the possibility to participate in extracurricular courses on group leadership. Perhaps this difference in pedagogical approach within the education programme is reflected in why the healthcare sector currently is struggling with issues related to a lack of leadership skills (Combes & Arespacochaga, 2012)?

First steps into student leadership

The process of group formation had several preconditions, which had to be addressed in turn. To start with, the new student leader needed to obtain a mutual "yes, I belong" from each group member. Mutual acknowledgement of *the group* provides it with a foundational trust and guarantees increasing intellectual participa-

tion of its members. In the setting of a University and a Medical School, where many students perceive heavy study pressure, an attendance list worked as a strong symbolic tool representing the formal aspects of *inclusion* in the team (Schutz, 1958). According to our experience, usually from the third session and onwards the groups had settled. Group members were comfortable enough to participate and challenge each other in a positive dynamic. They understood the method, and its non-hierarchical foundation. Eventually, a liberating atmosphere of learning through asking ever better questions would usually establish itself.

If a group was too large, e.g. more than eight, the dynamics would require different leadership strategies: quite often, the notion of leading several subgroups altogether, which usually meant a more directing role as facilitator. Something of the opposite happened if the groups were too small: less than four participants rendered a challenge for the leader to detach from the role of being one of the ordinary participants. In addition to group size, a welcoming physical ambience such as a well-equipped group rooms, preferably with coffee available, also helped to build a positive atmosphere.

Leading a team through the first stages of its evolution increases the experience and agility of the student leader, putting pressure on them but also providing feedback on their performance. Group dynamics mirror the process: a confident and competent group leader sparks confidence and competency in the team.

Continuous leadership education

Competent student leaders require competent leadership programmes. Without training there is a risk that many student group leaders are not given the chance to develop beyond the stage of self-centered leadership, which was prevalent in most groups in the beginning of the SI initiative.

Well-prepared group leaders who were sensitive to socialisation and encouraged self-evaluation, rendered well functioning groups with motivated group members. The most successful student leaders established "fair-play" rules, stating that the competency of everyone should be valued, that there existed no "stupid questions", and that no one should be ousted or left behind. Sooner or later each group member had found his or her position. In the best of cases a synergistic team working under openness evolved over time. This, however, portrays both the strength and the weakness of students assuming an active role in their learning, because not all students produce suitable leadership.

The competency of student leaders needs to be developed through continuous leadership programmes. Achieving successful student leadership requires a programme with a clear methodology, thoroughly implemented and supported in order to prepare and continuously improve the student facilitators. Therefore, a routine of post-meeting tutorials was established so that student leaders and their supervisors could discuss and evaluate their experiences. Mostly, these meetings were arranged during lunch to save time and fit the schedule of both students and staff.

The tutorials provided numerous insights: we learnt to focus on our own performance instead of focusing on weaknesses of group members; we saw the difference between criticizing an action rather than the agent; but most importantly, we understood the importance of establishing a structure and practice of continuous improvement through cycles of reflection and evaluation. Most probably, there will be a positive selection of students applying for the role of student leader. Nevertheless, establishing a structure for training student leadership helps the initiative to overcome challenges related to students facilitating the learning of their peers.

Self-leadership

Besides training generic team leadership skills, student leadership programmes provide excellent chances to develop important aspects of self-leadership. As students and group leaders we learnt the importance of taking increasing responsibility for ourselves and our obligations: puzzling together the equation of our own studies and our leadership experience taught us important lessons on accountability and efficacy; planning ahead of time; keeping logbooks of our groups so that we kept track of the evolution of each group; delegating administrative tasks to our students; doing our best in keeping deadlines; arriving on time and ending the sessions on time etc. These practical experiences taught us components of efficient leadership.

The moral dimensions of our actions or omissions become apparent in a group. When students are handed the freedom to pursue parts of their curriculum under their own leadership, they are also handed the responsibility to make good use of that freedom – both for "me" and for "us". Whether a group evolves in a productive and integrative direction, or the opposite, carries important lessons of moral character, provided there is reflection. Regardless, self-leadership deals with the aspects of morality and the responsibilities of the individual towards that of the whole.

Approaching knowledge

Question-based methods with an in-built structure of reflection and feedback loops, such as SI, foster thoughtfulness. Such an approach to the process of learning encourages curiosity and may conduce towards deeper awareness of the processes of knowledge generation.

I believe one of the key strengths of SI methodology is that it trains students to test different pathways of thought to learn. While a group keeps attacking problems on different conceptual and con-

textual levels, and with different modus operandi, it grows in self-awareness. Individual members and the group as a whole gradually gain insight into how their own intentionality works, i.e. learn to detect their own biases, blind spots, and intellectual directions. Deeper awareness of the more foundational processes that generate knowing may arise through this essentially heuristic method. Combined with an aspiration to create wholes (Haughey, 2009), i.e. an intention to fill breaches created by increased sub-specialisation, this may create a very meaningful and thought-provoking learning experience.

Beyond the university

A well-managed student leadership programme should in the end transfer leadership skills, whether formal or informal, into serving communities and professional organisations. Universities with ambitions to form agile and ethical professionals in a globalised, competitive world of science and markets may find this to their interest.

In my current job as resident physician in Stockholm I co-founded an SI pilot in 2009 to train junior medical doctors during their internship rotation at our department. In Sweden it is common for senior doctors to teach junior peers through one-to-one supervision or lecturing. The translocation of SI from academia into a hospital programme was plausible since senior physicians were already used for the purpose, so why not complement with a more activating approach? Furthermore, support from the head of department, and the evaluative capacity of the Human Resource department at the hospital, helped document the results (Wahlström, 2012).

Nearly all participants in our pilot expressed positive remarks and improvement of their internship experience. Conversely, on a few recent occasions when we haven't been able to deliver our

standard amount of SI meetings – due to challenges listed below – interns have expressed dissatisfaction.

With increased support for our project we requested a restructuring and standardisation of the lecture programme for interns. In this way it would be easier for us to complement the lectures with SI, when needed. We also assessed the ten most prevalent presenting symptoms in our Emergency Department (ED). We created clinical case vignettes out of these and used them in SI in order to target the most common situations in an intern's typical day in the ED. Subsequently, the head of our department granted resources for training and preparation of new SI leaders, including a start-up of regular supervision of SI methodology. We were thereby able to scale up the project to its current size of five to seven medical doctors supporting groups of interns on a regular basis. Results have been promising according to both departmental and external evaluations.[42] Although no single external, and only few internal, evaluations have *exclusively* studied the effects of SI, it is probable that the project has to date contributed to intern satisfaction at our department. Concurrently, our hospital as a whole has improved its internship satisfaction and ranked number one in Stockholm in the latest external evaluation by the Swedish Medical Association (SYLF AT ranking 2008-2012).

Implementing a student leadership programme in a professional setting of healthcare services and employer-employee dynamics carries its own challenges. We are currently addressing issues such as periodically absent SI leaders due to external rotations and paternity leave; night shifts leading to varying schedules for both interns, the "students", and resident doctors, the "student leaders". We also need to rethink how to improve continuity in the group member composition of our SI groups – more resembling the SI programme of the School of Medicine at Uppsala University. Hitherto, we have been able to offer SI with varying group members

[42] Internship rating of Swedish Junior Doctor´s Association, a part of Swedish Medical Association.

and group leaders from one session to the other, which has limited the potential for a stronger team-building experience. There is also the relative scarcity in resource allocation for professional learning activities in a stretched, publicly funded healthcare system. In the near future we will need to adjust the programme to both local and national restructuring of internship and residency curricula.

Regardless of these challenges, we are convinced of the need to improve teamwork skills among professionals, especially in a rapidly changing healthcare sector. We also see the potential of increased productivity that should follow knowledge and competency inducing programmes among peers, as is experienced within higher education.

Concluding remarks

Student leadership programmes, such as SI, carry great potential to offer a broader approach to higher education and subsequent professional life. To spark innovation and entrepreneurship, whether scientific or commercial, we must ask the right questions and form the optimal teams to answer them. To implement solutions we need agile individuals in well-functioning teams to deliver them. Student leadership programmes may add an important building brick in the formation of bright and able professionals, thus complementing robust scientific curricula with an elementary human dimension: that of working together.

Universities traditionally convey knowledge, harbour civilisation and push the boundaries of science. A number of graduate schools already offer leadership and management programmes. There should be little doubt that new forms of student leadership training need to be integrated into curricula, particularly medical (Ohrling, 2012; Tomson, Tomson & Savage 2012). Forming agile professionals requires us to move beyond the horizon of sub-specialised research towards equipping students with key skills of effective and ethical leadership.

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V.
VISIONS FOR THE FUTURE

What should students actively participate in?

- - *Student coordinated ESD at CEMUS and the purpose of education*

Daniel Mossberg, Director of Studies at CEMUS, Uppsala University and SLU

> Institutions of higher education – indeed, all schools – must aim to create an ecologically competent citizenry, one that knows how Earth works as a physical system and why that knowledge is vitally important to them personally and to the larger human prospect. […] The scientific evidence suggests that the years ahead will test coming generations in extraordinary ways. Educators are obliged to tell the truth about such things but then to convert the anxiety that often accompanies increased awareness of danger to positive energy that can generate constructive changes. (Orr, 2010, pp. 75-82)

Student coordinated education at CEMUS

CEMUS[43] started as a student-initiative in the early 1990s; the first course, *Man and Nature*[44] was a part-time evening course with over 200 students from Uppsala University attending it in 1992. The same model described below was used from the start, although many things have changed (Hald, 2011).

[43] The Uppsala Centre for Sustainable Development, CSD Uppsala, is a university centre at Uppsala University in collaboration with the Swedish University of Agricultural Sciences in Uppsala (SLU). CEMUS Education is a part of CSD Uppsala. More at: www.csduppsala.uu.se

[44] In Swedish, *Människan och naturen*.

CEMUS educational model

So how does the educational model work today? Each spring and autumn, course coordinator positions are advertised; students from Uppsala University and SLU are hired to organise the courses at CEMUS[45]. The courses are mostly part-time, evenings, and deal with a wide range of issues: environmental history; climate change; leadership; urban agriculture; sustainable design; project management; communication; sustainable development in Sweden; technology; development; economy and energy.[46]

After an intense start-up and introduction during the first week of April or October the course coordinators then work with the outline, schedule, literature and examination for the course for three months. A supporting and executive group consisting of professors, university teachers, researchers, PhD students, societal actors and senior staff from CEMUS education, also takes part in the planning of the course, and formally decides on the course set-up[47]. The meetings are planned and chaired by the course coordinators. During the planning phase and the start-up of the courses, the course coordinators collaborate with colleagues from other courses in a series of meetings that focus on the practical and creative aspects of how to do a university course at CEMUS. Course coordinators also participate in open events, seminars and workshops that deal with sustainability, pedagogy, didactics and educational philosophies.

Guest speakers carefully selected from academic disciplines, both within Uppsala University and internationally, are invited to hold the course lectures. Additionally, societal actors outside the academy are given presentations. Seminars and workshops to activate the students are planned and executed by the course coordinators. Af-

[45] Most of the course coordinators from previous semesters continue working with the same course at least a second time, so not all courses demand new people coming in each year. Some course coordinators also work with more than one course.
[46] More about CEMUS Education can be found at www.csduppsala.uu.se
[47] The head and deputy examiner is also decided upon within the group.

ter evaluations have been handed in and the final examinations and projects are examined, a course report is written and presented at conferences. This procedure is at present date the CEMUS model.

Education for sustainable development, ESD

There are several aims and ambitions within ESD. Kronlid defines ESD as a research field that organise both education and a political discourse (Kronlid, 2010). UNESCO has stated that the UN Decade of Education for Sustainable Development, 2005-2014, highlights a development that is: "environmentally sound, socially equitable, culturally sensitive and economically just" (UNESCO, 2012).

The Swedish National Agency for Higher Education (2012) instructs universities to: "promote sustainable development to assure for present and future generations a sound and healthy environment, economic and social welfare, and justice."

Research questions within ESD focus around how "[will] future generations […] have the right to the same welfare as we have[?]", and "how many generations […] should [we] be concerned about[?]". To some extent these questions relate to needs beyond those of humans, i.e. animals, plants (Öhman, 2008, pp.17-32). Sandell et al. (2005, pp. 163-168, 199) defines ESD as part of a pluralistic educational tradition concerned with being a catalyst for *processes* [author's emphasis] that enable students to critically discuss and assess different perspectives on a specific topic. In comparison, the fact-based tradition looks more at scientific measurements and results while the normative tradition is concerned with improving environmentally friendly behaviour and attitudes.

How are these ambitions actualised within student coordinated ESD at CEMUS? As stated earlier, the ambition is to be methodologically pluralistic without simplifying the complexity and dynam-

ics of both ecological and social-political-economic systems.[48] Courses are multi- and interdisciplinary and lie at the forefront of sustainability, for example updating literature to current events, research and scientific news.

What is the purpose of education?

Before getting into the discussion of what students should actively participate in, we have to take a step back and address two questions:

1. What is the purpose of education?
2. What do we want students and intellectuals to be able to do in the present and future world? What do they want to be able to do in the world?

These questions are answered in twofold and define the aim of ESD at CEMUS. We could say that education serves to prepare students for subsequent work life and, in most cases, a specific profession; graduates receive a formal list of academic achievements and are expected to use their skills in their daily work. At CEMUS, this preparation is more focused on preparing students for an individual career, and life.

Education as a tool for understanding and working for sustainability

Firstly, our task at the university is not maintaining and updating a specific work tradition and profession. CEMUS education was

[48] Although we strive to be pluralistic, it is neither possible nor desirable to have an education totally devoid of facts or norms. One could argue that all education in some sense is based on certain facts, epistemologies, axioms and norms.

started and exists 20 years later because of the historic and ongoing, unsustainable state of the world. Education is thus a tool by which we can understand, analyse and reflect upon the complexities of environmental issues; and discuss and develop possible solutions and practical ways of working for sustainability.

This is not to say that singular solutions or even a specific morality is endorsed within ESD; rather, education strives to elucidate how differing ambitions and perspectives influence research, problem definition and solutions offered.

Education as a means for students to find their own potential and passions

The second aspect concerning the purpose of education connects to the historical and philosophical roots of education. Russell L. Ackoff and Daniel Greenberg point to the definition offered by *Oxford English Dictionary*: "the process of nourishing or rearing", referring to the Latin verb *educere*, from which the English word is derived, which means "to lead out," or "bring forth." The purpose of education in ancient Greek philosophy was thus to draw "forth from […] each person the full potential that lay within them (Ackoff & Greenberg, 2008, pp. xiii-xiv)".

Ambitious goals, and hardly any single course or educational institution fulfils them. With that said, we have used student activation in an attempt to provide the best possible conditions for students to find their own unique potential and passions in life together with others. Letting the students find their own potential and passions might sound like something we all can agree on. At CEMUS, this has developed organically by the students in a trial and error process since the 1990s, and has managed to evolve and develop due to commitment of active student participation along with structural maintenance and formal execution by boards made up of professors, administrators and alumni.

What does CEMUS want students to be able to do?

For student participation, CEMUS wants students to able to critically reflect upon and discuss contemporary issues relating to the environment; to be able to combine theoretical knowledge with practical methods for sustainability; to stand up to narrow minded solutions to common dilemmas; to creatively and collectively find ways of doing things that does not create new problems down the line; to be able to plan, organise, facilitate and lead in different contexts, with different people; to challenge themselves and others.

Still, to say what the current students are to be able to do is a bit tricky. As mentioned, students have always had a large part in defining the development at CEMUS. We only know the students after they have started the course. The situation is similar to that of freshmen at the university. Often, it takes a few semesters for a student to understand individual interests, passions and begin formulating answers to what one could to in the world.

What should students actively participate in?

From its founding, CEMUS has relied on a model for using students to actively participate in other students' learning. There is, however, some questions regarding what students are supposed to actively participate in. As of present, education is part of the problems related to environmental degradation; social inequality is maintained by systems of higher education, and many professions depend on energy usage that is proving devastating to regional ecosystems and contributes to global warming. Then again, education itself has the potential to provide a more sensitive understanding of environmental limits.

So how can we plan for, realise and practice the kind of education that liberates the potential that teaching and studentship bring with it? And how can that education be an integral part in stopping

unsustainable practices, and discovering new and old ways of living sustainably on this planet?

Some suggestions concerning active student and teacher participation

The process of activating students and teachers, not assuming they are all passive now, starts in the specific context of each learning situation. This final section lists some general suggestions that aim to serve as a starting point for further discussion.

Create an educational think-and-feel tank where students, teachers and university administration come together. There is need for a formal and informal forum to discuss the practices, environments and cultures to bridge the divide between instructing teachers and students listening passively. We need to identify what is problematic with education at present, and find inspiration in history and the present for new ways of organising and activating education.

Include senior students in the planning of the course. Allowing development of a course by senior students who recently attended it provides the teacher with a qualitative picture of experiences and a dedicated group of co-workers. The students will have more of a chance to process the course content and reflect on the learning and solving of problems they themselves may have experienced from the course. Including senior students could range from a luncheon meeting, paid for by the department itself, or having students employed as coordinators for the entire course. It all comes down to the context from where you start.

For teachers: encourage and support student-organised seminars and workshops. For students: initiate student organised seminars and workshops. With fewer in-class hours for students, especially within the Humanities and Social Sciences, the need for student organised seminars, workshops and other forms yet to be discov-

ered, is increasing.[49] Spending time learning by oneself, reading, reflecting, analysing, is a part of higher education, but should not be the dominant form of learning. Most people learn and grow in relationships with others, although working in groups can be frustrating and create conflicts. The format and structure should be initiated and developed by students with the support from teachers in order to ensure its successful implementation.

Use the world beyond the traditional lecture hall as a learning space. The actual and mental distance between what is studied and the student varies greatly between different scientific disciplines. Despite attending ordinary education, more time spent on complementary means to learning also needs to be encouraged actively by the departments, for example by being included as part of the formal examination. The tasks could range from conducting interviews within the sectors the students study to envisioning a more sustainable Uppsala; what would it be like?

Final thoughts

The questions for this chapter have been answered only partly; much remains to be said on the specifics of each unique educational situation and general copy-and-paste solutions tend to limit other possibilities. As for CEMUS, the ambition of active student participation has resulted in an enduring research and education centre due to its combination of university personnel for structure and student coordinators for its day-to-day maintenance.

With that said, I personally believe that a truly inspiring, creative, sustainable university and education does not have to be a project for a distant future. We have all the people, places, resources, knowledge and skills we need at present. The university, with its many students and employees, could, in collaboration with

[49] See Larsson (this volume, pp. 68-70) on the challenges within higher education relating to active student participation.

graduates, who hopefully found their passions in life, work together for a better and sustainable world.

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Reaching out to students

– Using student leadership for enhancing the university

Michell Manblom, Certified Physiotherapist, Trained SI Leader and Master student at the Department of Neuroscience, Uppsala University

Introduction

In this chapter, I will initially share experiences from active student participation within the Physiotherapy programme at the Department of Neuroscience, Uppsala University 2009-2012. The challenges and benefits of having students active in other students' learning will be discussed. The aim of this chapter is to serve as an introduction for institutions that consider integrating supplements where students enhance each other's learning, in this case through SI.

Universities experience an increasing international intensity in the competition to attract students for courses and programmes. Addressing this challenge in ways relevant to students and the university alike is essential in reaching out to new groups of students and remaining innovative about learning.

A case study of student activation

When I registered at the Physiotherapist programme in 2009, SI was used as a supplement to high-risk courses, e.g. Basic Anatomy, and senior students facilitated meetings to support us in learning

the course material. Having been introduced to the methodology and benefited from its practice, I later applied to take on the same role for my peers the next semester. What follows is a description of the problems with high-risk courses as identified by the department; the solutions formulated to address high rates of students failing examinations; concluding with the results reached thus far in these endeavours.

The problem

Basic Anatomy is a high-risk course in the Physiotherapist programme that de facto imposed a bottleneck both for students' progression and the Department of Neuroscience. Several students failed the course examination; and since a pass is also required for entrance to the second semester, these students needed to take alternative courses until they had successfully completed the Basic Anatomy examinations. The incidence of failure disrupted the size of study groups throughout subsequent semesters, resulting in disproportionally large groups in some instances and a severe shortage in some courses later on the programme. The department's economic situation became irregular; both finding and filling student positions on the courses resulted in a vicious cycle that somehow needed to be broken.

Apart from failing the course, students expressed a need for long-term learning of the material. Usage of adequate levels of study techniques varied and there were few resources to draw upon for the department in scheduling more class hours, or seminars for discussion or to learn problem solving.

The solution

Initiatives for more active student participation were introduced to the programme through the methodology of SI. Instead of adding

more lectures or class hours, senior students were used to facilitate study groups to supplement ordinary education.

Expertise of student activation was to be found within Uppsala University; the department hired a SI coordinator, Muhr, to facilitate its senior students in the methodology of SI. Senior students developed each other's leadership in order to include all participating students at subsequent meetings; relevant study techniques were discussed and sharpened.[50]

The main components of training in the department's student activation included group dynamics, communication and question-based leadership. The SI leader facilitating the meetings was responsible for organising meetings and ensuring that conditions for learning were optimal. I facilitated SI meetings once a week during the Anatomy course, and when examinations drew close I offered extra meetings along with sufficient amounts of *fika*[51] for the participating students.

The results

Since its initiation, rates for taking and passing the examinations for Basic Anatomy have improved. Evaluations confirmed that SI gave room for discussions and opened a forum for all to participate in; smaller groups instead of full classes resulted in a dual process of learning, both for the participating students and the facilitating senior student.

The facilitating students reported that much effort was put into activating all participants at the meetings and that continuous feedback from a supervisor was necessary to develop SI further.

[50] See Andersson, R. (this volume, pp. 102-104) as well as Escobar (this volume, pp. 91-92) for examples of different initiatives and methodologies on active student participation at Uppsala University.

[51] The Swedish word *fika* is short for "taking a coffee/tea and some snacks to eat". It was an essential component in most of the facilitated meetings and contributed to creating a social context for learning.

When exchanging experiences with other SI leaders, we concluded that some ´types´ of students recurred; there was always the shy student, the loud student, the knowledgeable and the uninitiated student. The reserved students expressed a need for smaller groups and secure environments of sharing knowledge. If the facilitating student balanced the group dynamics, members were able to engage in each other's learning.

The sought-after seminars and problem solving was provided by the SI meetings in that senior students facilitated a forum for discussion, participation and inclusion but were not the actual answerers. Senior students guided the participants through their questions rather than gave them straight answers. The students thus had a large influence over the questions and issues highlighted in comparison to the scheduled classes. The department intended to use SI meetings as a means to in-depth discussion of assignments given in ordinary education, but the facilitating students also questioned this ambition as it narrowed the field of inquiry, which was one of the characteristics of SI meetings.

Though results in participation and satisfaction of students were sufficient, it came at the expense of much effort on part of the facilitating students. Student activation in 2009 required a substantial amount of unfunded effort and spare time of the senior students to qualitatively perform SI within the Anatomy course; tasks included administration and scheduling of meetings, supervision, and feedback on each other's performance during the meetings.

During my years facilitating SI meetings, I advocated recognition of the work performed for active student participation, resulting in a nominal salary being granted by the department. At present, the salary is raised on an individual basis depending on how long the senior student has been facilitating meetings. Teachers contribute by providing course material to the meetings and informing new students of how to apply and participate.

The student's perspective

Why is it essential to provide students with leading roles in supplements to improve higher education and the university? How is this relevant to the students´ own learning, or future career? And why should universities endorse initiatives? From a student's perspective, they have been summarised to be of importance in establishing membership of the department's collegium, learning study techniques, and the development of generic skills.

Belonging to a collegium and discipline tradition

Having practiced student activation early on in the Physiotherapist programme made participants well prepared for conducting the remainder of the bachelor studies, including instruction in several professional arenas, meetings with patients, and discussing ergonomics within the collegium.

According to the course syllabus in Basic Anatomy at the Physiotherapist programme, students should be able to describe and explain relevant anatomical facts for patients and communicate with colleagues through the proper use of terms and technical language. Studying and practicing physiotherapy requires an understanding of how to relate information of a patient's symptom to that of theoretical knowledge and guiding them to rehabilitation. As explained previously, student participation through SI enabled students to practice and demonstrate the required skills.

Both facilitating and participating students expressed that SI gave a deeper understanding of physiotherapy itself and a sense of belonging within the department; this I believe was due to the institutional supervision of the SI initiative. Though efforts could have been more substantial, and have until 2012 been developed further, the department's interest in new methodological approaches, financing of training and provision of materials for meetings signalled to new students that active student participation was of rele-

vance to the Physiotherapist programme. By training and supervision, facilitating students ensured that all students, regardless of knowledge level, would be able to participate and benefit from the meetings. The focus of SI was on addressing a high-risk course and in the process, peer inclusion avoided the formation of strong and weak teams among the students.

Techniques for learning

During my meetings, innovative and creative methods and alternative sources of knowledge were used in association to lecture material to lend further understanding of the subject; home-made quizzes and skeleton models are two examples of thinking "outside the box" regarding anatomy studies. We used colourful candy cords to simulate the orientation of the outer flesh structures on the skeleton. Elastic rubber cords simulated and visualised the muscles' movement and were related to theoretical knowledge regarding muscles' origins and attachment to bone structure.

Throughout the course, I and other SI leaders endorsed an open mind to new ways of learning the course material; subsequent evaluations indicated that students both appreciated and benefited from the exercises when designing study schedules for later studies.

Development of generic skills

Active student participation through SI contributed to the development of students' generic skills. This is essential since initiatives will include students of varying ambitions and goals studying a programme.

What the meetings focused on was developing problem solving, processing unfamiliar problems and identifying relevant strategies for arriving at a solution. All participants were required to construct and express logic in their arguments and a plausible relation

to theory. Further, this work was to be conducted in a team; when students did not understand a concept they were required to identify and formulate the knowledge gap into a question for the group to answer; when they believed they had covered a subject, they were asked to describe it both in abstract and specific terms.

Regardless of career path, generic skills are required in contemporary professional life and they should be integrated into all programme goals according to the Bologna process, since employability in itself is an integral part of higher education. Activation of students is a practice in understanding how knowledge itself is understood and presented at different levels of depth and to people of differing comprehension of the specific subject. Stimulating the development of these skills at undergraduate levels enhances the chances of their continued development until graduation.

The university's perspective

The benefits and challenges related to activation of students encompass economic rationale of contemporary higher education, the development of a ´closer´ university in terms of sharing knowledge, and the legitimacy of supporting initiatives.

Higher education as a business enterprise

Higher education is in some aspects similar to a business enterprise; its trade is skills and expertise developed from and among facilitators to and between the students. Having applicants and registered students on courses and programmes is a prerequisite for conducting all else at the university – students, not research, are the true coin of higher education.[52]

[52] Student representatives from the University of Uppsala concluded that: "Students may not always come up with the greatest opinions of their university […] But the student's expertise lies in their inquisitiveness...[They] are an asset, since they are the guarantee of new ideas and continuous development of our universi-

Competition for students is intensifying, both in national and international terms. The amount of students is growing, but so are the number of universities, institutes and research centres offering courses and programmes. Further, students are very mobile when it comes to choosing between countries in search of the right education.

During recruitment of new students, the university could easily make itself more attractive by collaborating with present students in order to increase their interest in the education. Every year, Swedish universities spend a lot of time, money and effort on advertisements and media in order to allure students to apply to their programmes and courses. At the same time, retention rates are important among the current students so as to ensure courses at advanced level and a graduating ´product´. Finally, the aim is to recruit students who are well prepared when starting undergraduate level as well as graduate level because of the benefits that come from having ambitious and highly motivated students. In all these instances, active student participation has been used at different levels within universities, and results have been analysed according to the economic rationale they operate under.[53]

Establishing networks for practicing student activation

At a central level of the university, it is advisable to connect current initiatives in a network to transparently share knowledge between departments. This is beneficial both to become familiar with active student participation as a concept and in identifying the va-

ty". ur, Chairman, Callenberg L., PhD Committees Chariman Wiggberg M. Uppsala student union 2007.

[53] See Gillis and Holmer (this volume, pp. 45-47) for for examples of SI to varying contexts and reasons within departments and faculties at Lund University.

riety of methods used, for example SI, in enabling students to enhance other students' learning.[54]

Initiatives where students have a central role will vary and their development is an organic process. Results are viable for specific contexts and there are no universal solutions; activation of students will thus be done very differently depending on the discipline and department.[55] But most share the training of generic skills and would benefit in long-term stability from institutionalising these components; specific disciplinary skills can then be trained at departmental level where adjustments to the specific context are necessary.

To some extent student activation has *always* been used within higher education. It is not new to see students working together and training generic skills. But usually, the ability to conduct constructive meetings is restricted to those already able to learn or according to social preferences. What is proposed here is an academically relevant social forum that is facilitated by trained senior students and, by extension, the university itself.

This is done in order to ensure that there is a supplement for *all* students registered on a course in order to enhance their learning. The aim is not to make sure that students have friends, although most group members tend to become friends quickly, but to guarantee that there are viable means to learning among peers while studying at the university. Social isolation in some student corridors is also part of the quality of studies, regardless of what the syllabus might say on the matter.

[54] During autumn of 2011, seminar-series on active student participation were organised by the CrED project at Uppsala University. It is a good example of a university-wide initiative including both students and staff from various disciplines in the enterprise to stimulate further development of educational quality.

[55] See Mossberg (this volume, pp. 123-125) on the development of CEMUS education model and reliance on students as course coordinators.

Sufficient support of initiatives

Providing the students responsible for facilitating meetings with support is crucial to both quality and long-term usage of active student participation within a university. When implementing SI at the Department of Neuroscience, it was the commitment of senior students that ensured its initial survival and success. In cases where efforts correlate to increased retention, it is legitimate to provide sufficient support for quality and maintenance of the initiatives.

Within SI at my department, facilitating students undertook near full responsibility of its operation: planning, facilitating and evaluating the weekly SI meetings; informing and presenting the work to new students; and finding adequate rooms and material to conduct the meetings.

The workload is of secondary importance as long as the efforts are adequately rewarded. Mostly the rewards are of a symbolic nature, but its importance is not to be underestimated.

Communication and routines for exchanging information is necessary between key figures in the department and the facilitating students. This is due not only to supporting the meetings, but understanding their content and purpose. Being a supplement to ordinary education, the meeting agendas are owned by the participating students. In some instances, teachers could assign topics to the SI meetings later on, but with little communication between them and the student facilitating the actual meeting. Endorsing initiatives is thus not only about encouraging their usage, but also understanding their operation in relation to ordinary education.

With a dual manner of communication, the facilitating students could be provided with further course material if necessary but still have the authority in managing their own meetings. The purpose of active student participation within the Department of Neuroscience will continue to evolve, and its relation to ordinary education is most constructively found through active dialogue between the

departments, the students facilitating the meetings, and evaluations of its performance.

Conclusion

Active student participation could be expressed in different forms and it should be adjusted to its context and the challenge presently at hand. The case in this chapter provides an overview of the problems faced by large groups of students failing a high-risk course, and subsequently disrupting the efficiency of the entire Physiotherapist programme at the Department of Neuroscience. The activation of students in each other's learning was formulated as a solution and after evaluation the results indicated several benefits for both the university and its students. Seen as a business enterprise, the university would do well to include students within higher education, both as a means of improving retention, ensuring recruitment of new student groups and in delivering a more generically skilled graduate, regardless of discipline studied.

A university without students is not feasible and loses its main purpose. In order to nurture this dependence on the students, I have argued that students should be involved in higher education and allowed space enough to take responsibility of their university. Active student participation should be an essential possibility for every student regardless of future career paths.

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Student employment in higher education

Glen Jacobs, DEd Former Executive Director of International Centre for SI, Senior Associate Dean at St. George's University, Grenada, West Indies and
Sara Rabie, PhD Associate Dean, Director of Student Academic Support & Development at St. George's University, Grenada, West Indies.

Introduction

Student employment is an increasingly important component in higher education. The recent worldwide economic depression, along with long-term trends of growing numbers of students in combination with budget cuts on education per student, has enhanced the prevalence of students seeking part-time or full-time employment while studying (Bradley, 2006). Up to 50 percent of full-time, and 80 percent of part-time, students are employed while studying in the United States, and most educational institutions depend on this relatively cheap student labour in order to function (Lederman, 2009; Muzaka, 2009, p. 1).

Students have characteristics that are of special value to the university work setting and can work under conditions that other qualified personnel would not. Employing students is appropriate as long as the work does not damage students' ability to meet their academic and professional goals.

Higher education has a responsibility to endorse student employment within the academia itself in order to enhance student learning and future employability. As the cost for higher education

in most parts of the world rises, students are more likely to seek employment. As a result, working students may not be able to finish their courses within expected timeframes and demand for online learning options may increase due to its flexibility in examinations. Higher education should consider how to make the most of these changes for students and for institutions of academia. The innovations needed should emphasise preparation of students for lifelong learning, a necessity in our rapidly changing world. Additionally, it should produce graduates who are more competitive in the job market.

Why do students seek employment while enrolled in an institute of higher education?

Except in countries where tuition is free and students' living expenses are supported by student loans and subsidies, most students work in order to pay for their course material, literature, fees and upkeep in general, i.e. food, accommodation, incidentals. In the United States, average costs of tuition fees at two-year colleges and universities have risen 38 percent in the past decade (Boehner & McKeon, 2003). These increased costs force more students to seek employment while studying, though some work may be due to students' ambition to enrich their social life, and/or acquire experience of labouring and employability on graduation (Broadbridge & Swanson, 2005, p. 242; Dakas, 2011, p. 4). The common reason cited for *not* working is its conceivable interference with studies (Lucas & Lammont, 1998, 42). But for many students, working is the only viable option if studying at all is to be conducted (Callender, 2008, p. 366).

Why are students a special resource in the employment structure of institutions?

At the most basic level, institutions benefit from employing students because they are in plentiful supply and are willing to work for low pay. Furthermore, most are interested in working part-time and therefore do not receive benefits. This is an enormous financial incentive for hiring students rather than employing full-time faculty or staff to perform the same functions, for which many are also over-qualified.

Beyond being an inexpensive source of labour, students are especially well suited to some university positions. Students tend to bring a fresh perspective to a position and are a source of innovative ideas. Working with them can provide insight and understanding into the prevailing student culture.

Students often perform the kind of tasks that are less desired by faculty or staff. Because they are usually pleased to have employment, they tend to be energetic and enthusiastic and, due to their relatively short-term student status, tend to avoid "burn-out" during their tenure (Haavik, 2003). Before they become bored or the job becomes unbearably tedious, they graduate, move on and get replaced by different students.

Furthermore, students have characteristics that make them a valuable resource in promoting a more active learning environment: students have sufficient knowledge, or can rapidly gain it, to be effective facilitators for their peers and students at a lower level of academic training (Ten Cate & Durning, 2007a, p. 548-549). When at advanced level, they make good role models for undergraduates and tend to be perceived as more approachable than faculty. They may have the ability to better understand what other students are facing and may be able to explain concepts at a level that is particularly helpful to other students.

Students also have flexible schedules that allow them to meet the scheduling demands of the institution, which must often pro-

vide many services outside of regular work hours (Haavik, 2003). Students are able to fit their work responsibilities in between their classes, often prefer to work irregular hours, and are willing to take night and weekend shifts.

What type of work do students perform in the university context?

The requirement of tasks can be very limited to those demanding specialised and high levels of skill and responsibility. The jobs can thus range from photocopying to serving as teaching assistants, facilitators, graders and course coordinators.[56]

The institution gains from this work being of relevance to the student's own learning, and often there are a variety of work opportunities on campus that relate to student interests and academic study. For example, a biology major could work as a Teaching Assistant (TA) setting up the lab or grading assignments, or could take a position in the lab running experiments. This allows a student's work to directly supplement and enhance their disciplinary learning. The institution gains from having someone with related specialised knowledge and with a vested interest in the task to assist (Haavik, 2003). They are more likely to make interesting observations and contributions, than people who have no background or interest in the subject matter itself.

Faculties of higher education have used Teaching, Graduate, and Research Assistants for many years and in several countries. At the University of Washington, students support faculty by providing more than 50 percent of all face-to face interactions with undergraduates (Parsons, 2011). Within the Department of Social Sciences, University of Sheffield, Graduate Teaching Assistants facilitate more than 70 percent of the small group seminars for first and second year undergraduate students (Muzaka, 2009, p. 2).

[56] See Mossberg (this volume, p. 134, 138) for examples of senior students responsible for coordinating courses within CEMUS, Uppsala University.

This anthology has primarily focused on active student participation through the student's role as facilitator of study sessions and seminars. This is an important role for which students are particularly well suited and benefited. The names and methods used are usually that of Peer Assistant Learner, Supplemental Instruction (SI) Leader, Group Review Leader, SI Facilitator, Peer Educator, Group Tutors, Peer Tutors and Mentors.

The functions and roles of these group facilitators may vary, but they are expected to actively participate in other students', and their own, learning. Furthermore, most are predominantly based on the SI model; facilitators do not directly teach, but assist students in actively processing content they have previously been taught through ordinary education, i.e. lectures or individual reading. When students interact together, the review groups are considered successful; the learning occurs when the facilitator listens and the students do the talking. This model has had great success in contributing to student retention and has been adopted and adapted broadly in a wide range of fields in many institutions (Jacobs & Stone, 2008, pp. 82-86).

For the student, what are the consequences of working?

There are various consequences for a student to work, the most obvious benefit being earning money; the most obvious detriment is loss of time to put towards academic or other endeavours.

Research on student employment is, necessarily, naturalistic. As such, it is difficult to identify the factors responsible for positive or negative outcomes. The relationship between academic performance and student employment has been found to be non-linear (Pike, Kuh, Massa-McKinley, 2008, p. 561). Grades for students who work a few hours per week are actually higher than grades for students who are unemployed, possibly due to more efficient organisation and time management (Kulm & Cramer, 2006).

Working a few hours per week tends to take the place of non-productive activities, such as watching TV, rather than supplanting time that would have been put towards academic pursuits (Orszag, Orszag & Whitmore, 2001). However, many studies find that working several hours, of thresholds ranging between 15 and 35 hours, negatively affects students' academic performance (Callender, 2008, p. 371; Dakas, 2011, p. 6; Kulm & Cramer, 2006; Pike, Kuh & Massa-McKinley, 2008, p. 561).

Studies have examined whether academic performance is differentially influenced by employment being on-campus or off-campus. Orszag and Whitmore (2001) found that working fewer than 10 hours a week at an on-campus job can have a positive impact on academic performance, while Pike, Kuh & Massa-McKinley (2008) found that there was no difference between the Grade Point Average (GPA) of students who worked fewer than 20 hours per week on campus vs. those who worked fewer than 20 hours per week off campus. Location of employment does not necessarily differentiate the factors of most importance to academic performance outcomes.

On-campus employment improves the probability of a student graduating, a finding that Tinto (1987) attributes to the job helping the student to socially and intellectually integrate into the academic community, perhaps through added opportunities for student-faculty interaction (Orszag, Orszag & Whitmore, 2001, p. 572). Employment on campus has also been found to result in fewer perceived work-school conflicts (Dakas, 2011, p. 5), probably because most on-campus employers are sensitive to the importance of students' academic responsibilities.

Regardless of location, but depending on the nature of the work, possible positive consequences of employment while studying are learning to manage money; building self-confidence, independence and self- esteem; developing generic skills of networking communication and leadership; and specific skills of applying theoretical knowledge in practice, if work is related to the field of study (Da-

kas, p. 7). Another possible benefit of jobs is that they allow students to socialise and be connected with others, freeing up time outside of work to focus on studies. Possible negative consequences of working while studying are fatigue, social isolation and high stress, again depending on the work performed (Dakas, 2011, p. 7; Kulm & Cramer, 2006).

Given that students are becoming more discerning consumers, and that institutions are more reliant on student employment, it behoves universities to consider how to *reduce* negative impact of employment on students and to *enhance* the benefits for students and the institution. In short, work experience can result in a better student "product". Students that have been employed are more ready for the demands of a very competitive job market. It benefits an institution in terms of quality of alumni employment when graduates are sent into the workforce with skills in addition to a degree, diploma or certificate.

How do we promote the positive effects of employment for students' academic performance and career potential?

The negative impact of work on academic performance is probably due to reduced time spent on studying rather than due to the employment itself (Pike, Kuh & Massa-McKinley, 2008, p.574). This perspective is supported by research that found that GPA in college was significantly correlated to time spent studying, participating in active and collaborative learning experiences and student interaction with faculty members, even when controlling for a variety of background characteristics and variables (Brint & Cantwell, 2010, p. 2462; Kuh, et al., 2007, as cited in Pike, Kuh & Massa-McKinley, 2008, p. 564).

How much a student can work, and still perform well on studies, differs between students and depends on the nature of the work. Academically strong students probably constrain their work commitments to a level that allows them to maintain an acceptable

focus on their studies, thereby minimising the potential negative effects of work on academic performance (Bradley, 2006, p. 485; Curtis & Shani, 2002, p. 131). On the other hand, a job that provides the opportunity to teach content related to the student's field of study would have inherent benefits for the student employee.

Universities should restrict student working hours when classes are in session; students working more than 20 hours a week feel that it has a negative impact on their studies (Pike, Kuh & Massa-McKinley, 2008).

Short-term gains for students may be at the loss of long-term goals, for example working longer hours for low pay and thus taking a longer time to graduate, thereby delaying and risking restricted access to better paid positions later in life (Orszag, Orszag & Whitmore, 2001). Students and the university have a mutual interest in that they graduate; thus student working needs to be considered as a relevant factor in higher education by its institutions.

Currently, most students work in jobs that are not related to their studies (Watts, 2002). Some benefits inherent to most on-campus jobs are reduction of wasted time and, in transit between work and class, increased connection to the university community, more interaction with faculty, and more flexible schedules. Also, on-campus employers are likely to be sympathetic to the competing demands of students' studies and willing to allow students to adjust their work schedules to accommodate their exam schedules or project deadlines.

The jobs on campus that are likely to enhance student learning are those that promote students taking an active role in each other's and their own learning as well as those that allow students to apply what they are learning to real-world contexts.

What are the benefits of small group facilitation?

The role of small group facilitators has direct benefits for the institution, the students participating in the group and the facilitators

themselves. Using peer facilitators alleviates the pressure on faculty and makes small group teaching and learning a possibility in large class sizes with limited faculty resources (Ten & Durning, 2007b, p. 592).

Small group sessions provide students with the opportunity to actively process the information they have learned. This is believed to be an important component of meaningful learning. Research has found that using senior students rather than faculty to facilitate group learning does not diminish the benefits to the students participating in the groups. When student facilitators are provided with training, their confidence and effectiveness is further enhanced (Bulte, et al., 2007, p. 590; Tolsgaard, et al., 2007, p. 555).

It has also been postulated that when supplementing teaching by experts, peer teaching provides the benefit of explanations that are at a level that is very helpful to a novice, since the knowledge base of the student teacher and the student learner is similar (Cornwall, 1979, as cited in Ten Cate & Durning, 2007b, p. 592). Experts have more elaborate, and differently structured, semantic networks than novices; therefore it is often difficult for experts to understand what aspect of a concept that a beginner is having difficulty with and how best to clarify this (Ten Cate & Durning, 2007a, p. 595). The cognitive congruence between fellow students is believed to provide benefits to the student teacher and the student learner alike.

Peers have the added benefit of being less intimidating and more approachable than faculty. This benefit enhances communication and interaction and makes students less concerned about exposing their mistakes or lack of understanding. More advanced students can empathise with the challenges of the academic programme experienced by other students, sharing specific strategies useful to them in their studies. They also serve as valuable and powerful role models. Less advanced students are encouraged by seeing that others have succeeded before them. The benefits are not only for the learners but also for the facilitators themselves, as students gain a

great deal from preparing to present material and from explaining challenging concepts. Revising content that was learned at an earlier stage of expertise, especially when identifying effective ways to reorganise the material so as to present it effectively, can deepen understanding and solidify knowledge (Ten Cate & Durning, 2007b, pp. 593-594).

Facilitating small group sessions provides an excellent opportunity for students to build skills and experience in teaching, a skill that is useful in a variety of professions. As students become skilled facilitators of groups, they build their skills of communication, time management, and leadership. Taking on the role of a teacher can also influence the way that students view themselves, contributing to confidence and the intrinsic desire to build further competence.

Furthermore, peer facilitated learning has the potential to greatly influence the learning culture of a university community. It convincingly demonstrates that knowledge is constructed rather than transmitted, a fact that is often not evident in the expert-led didactic model of education.

Initiatives to enhance the positive experience of student employees

- Monitor progress of students working on campus; university employers should adjust workload in regard to academic responsibilities, i.e. deadlines and examinations.
- Train students; workshops and online resources available to staff should be used to enhance required generic skills, i.e. time and resource management, work ethics.
- Identify and develop positions for innovative usage of technology within the academy; students should have a pivotal role in assisting institutions in adopting new technology, i.e. smart phones, tablets, laptops.

- Identify features for student employment on-campus for future work and CV; invest in a job assistance office and mentoring role of employers to guide students interested in on-campus work to tasks related to their interest and studies and assist them in moving to positions of more responsibility.
- Incorporate more opportunities for students to be involved in teaching, facilitating small groups and making sure they are rewarded; basic resources for their execution are necessary to demonstrate the institution's interest in active forms of student participation. However, it is recommended to sufficiently train facilitating students, evaluate their work and contribute to their quality through marketing and scheduling, providing relevant material, i.e. literature, whiteboards, pens and paper. Again, these tasks can be handled by facilitating students.

Conclusion

With rising tuition and diminishing budgets, campus employment is continuing to change and students are beginning to seek more return on their work investment. Students are looking for resume-building experiences and jobs that relate to their studies and interests. Universities would do well to invest in the infrastructure relating to employing students so as to capitalise on this valuable resource while contributing to the development of their product – competitive graduate students and future researchers.

This chapter has drawn upon several studies on student-employment to highlight the vices and virtues of students working while pursuing their graduate degrees. The predominant form for students working on-campus is as small group facilitators. In addition to this, a list of initiatives has been given as suggestions for the

university to consider regarding students potential for employment within the academy, and the unique possibilities student employment pose for the future of higher education.

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Students of higher education can be used as a resource in the development of quality for themselves and their university. Initiatives of the kind offer opportunities for numerous gains: they increase educational quality at relatively low cost as well as enhances both subject specific and generic skills relevant for the students research and labour.

A change of education has been requested from several directions, even referred to as a need for "revolutions" within the academy. The underlying theme in this anthology is that this revolution may be the concept, and usage, of the student as a resource for each other's learning. It is the ambition to make education *with* students rather than *to* students. By developing means for students to actively participate in each other's learning, universities could accommodate the many, instead of the few, while maintaining and increasing its quality.

About the editors

Johan Gärdebo holds Bachelor degrees in Social Science and the Humanities from Uppsala University and is studying for a Master in Environmental History. Gärdebo's current involvement lies in university-wide coordination of student participation at Uppsala University.

Mattias Wiggberg holds a PhD in Information Technology from Uppsala University with a specialisation in learning within organisations. Wiggberg's current work regards organisation of academia and support functions at KTH Royal Institute of Technology in Stockholm.

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