Learning to learn and learning to teach — Introduction to studies in higher education

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Abstract

Background: How students are introduced to their studies will affect the quality of learning. This project deals with tools for lifelong learning to increase students’ awareness of learning how to learn. In parallel to an introductory course for students, a course for teachers was given with a focus on tutoring students.

Aims: To evaluate an interprofessional transition course for first-year health science students, the LearnAble project, and a teachers’ course aiming to support students to be successful in their learning.

Method: The project was followed up by a computer-based course evaluation, reflective journals, the Learning Process Questionnaire and the Approaches to Teaching Inventory. The questionnaires were distributed before and after the courses. Teachers (n = 31) and students (n = 270) in two courses from different health educations participated.

Results: Students’ approaches to the course and to learning could be described as technical/reproductive, seeking for an identity or as reflective/transformative. The evaluation indicates that a deep approach to the studies among the students was related to higher age and female gender. Teachers with earlier pedagogical education supported students more in the attempts to question their own understanding.

Conclusion: The most obvious result was the positive impact of being a tutor for a group of students in parallel to studying pedagogy.

Introduction

For many students starting their studies in higher education involves an initial period of confusion and uncertainty (Entwistle 1990; Terenzini et al. 1996). The manners in which students are introduced to their studies will affect the quality of students’ learning, the development of their competence and, in general, their adjustment to academia (Perry 1968; McInnis 2001; Laing et al. 2005).

As a consequence of the expansion of the university system all over the world, students of today are heterogeneous in their prior educational experiences, as well as their social and cultural backgrounds. Their learning needs and expectations will also differ accordingly. In many courses, it is common to find ‘traditional’ university students coming straight from the upper-secondary level and ‘non-traditional’, adult learners with diverse educational and professional experiences. A feature of this diversity is also that students from non-academic homes may be more dependent on traditional educational modes of organizing teaching and learning. They are also more uncertain about their capacity to manage their studies, and, thus, they may be in need of closer contact with teachers and with student counsellors.

In this article we report an evaluation of an interprofessional transition programme for first-year health science students, the LearnAble project, and of a parallel course for teachers with focus on tutoring in the students’ course.

Practice points

- To be a tutor for a group of students in parallel to studying pedagogy encouraged teachers to be more attentive and motivated to attend to educational issues.
- The use of active learning techniques, i.e. LMS, data base seeking, reflective journals, group work, seminars, participating in a conference, was appreciated by students and teachers.
- A deep approach to the studies among students seems to be related to higher age and female gender.
- Teachers with earlier pedagogical education supported students more to question their own understanding.
- Many students searched for a professional identity, and a clearer focus on professional development may be warranted.

The LearnAble project

The project focuses on prerequisites for lifelong learning, provides tools for studies in higher education, and simultaneously aims at developing teachers’ insight into the students’ background and levels of knowledge (Hultberg et al. 2008). The basic structure for both courses is a mix of lectures and integrated supervised group discussions, both face to face and
computer based, with individual reflection on generic skills and learning styles. The development of metacognitive skills (Garrett et al. 2007), i.e. the process of thinking and monitoring of learning situations, is a focus of the project.

The students’ course

The students’ course includes basic computer skills and use of a learning management system (LMS), use of library databases, communicative skills, as well as discussions on specific issues such as ethics, ethnicity/culture, gender, informatics, statistics, scientific approaches, scientific documentation, evidence-based knowledge and the principles of oral and written presentation of a group work project (Table 1). There is a specific focus on competences needed for teamwork such as: Chairing a group, listening to others, cooperating, respect for other students’ views, critical evaluation, self-directed and reflective learning and awareness of how to use various kinds of resources. In the computer-based meetings, students write reflective journals and self-evaluations of their learning process. The students collaborate in the group meetings to identify a health problem related to their study programme, which will result in a written scholarly paper, using evidence-based knowledge. The scholarly paper is presented at a final conference arranged for the students using an Information and Communication Technology (ICT)-based medium. The course deals with the introduction of students to the first cycle in higher education (Bologna working group on qualifications frameworks 2005).

The teachers’ course

In parallel, the teachers’ course focuses on teaching in relation to the content of the student course (Table 2). The content in the teachers’ course is both pedagogic and didactic with a focus on the health sciences and educational perspectives on ICT and tutoring. The teachers are asked to assess how their strategies of teaching in the students’ course influences students’ learning as reported in their reflective diaries kept throughout the course.

Evaluation of the project

The development of the two courses was driven by two major questions:

- How should generic skills be introduced in the first cycle of higher education to support students to be successful in their learning?
- How should teachers in higher education be empowered to support students in effective learning strategies?

The evaluation of the project was focused on these questions.

Methods

Participants

The project has been implemented across 4 of the 18 programmes in Health Sciences at the Sahlgrenska Academy,

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<tr>
<th>Table 1. Outline of the students’ course.</th>
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<tr>
<td><strong>Main theme:</strong> Health</td>
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<td>Generic skills</td>
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<td>Learning activities</td>
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Note: ICT = Information and communication technology.

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<th>Table 2. Outline of the teachers’ course.</th>
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<td><strong>Content</strong></td>
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<td>Learning/teaching activities</td>
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<td>Small groups, face to face and ICT collaborative learning, lectures</td>
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Note: ICT = Information and communication technology.

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University of Gothenburg. The programmes that participated in the present study were Audiology, Dietetics, Public Health Science and Dental Hygiene. The project involved development and implementation of two courses: One for students entitled, ‘Introduction to academic studies within health science’ and one for teachers, ‘Teaching in academic studies in health science education’. So far, the project courses have run twice with a third just finishing. The teachers came from different disciplines and they assisted as tutors for a group of students in the students’ course. The students were mixed in interprofessional groups of 6–10 students in each. The aim of mixing students was to establish better understanding between students from different programmes, and thus enhance the possibilities of success in future collaborative activities.

The student course incorporated about 135 students per course, and the teacher course about 16 teachers per course. The courses took place over the first 10 weeks of the first semester, 7.5 higher education credits each. The teachers’ course started prior to the students’ course in order for them to be prepared to apply the theoretical perspectives on teaching and learning when tutoring the students.

Evaluation

The project was followed up through several evaluation procedures using different methods. One method was the use of a computer-based course evaluation questionnaire with items about pedagogy, structure and content of the course. In this questionnaire, students and teachers could also make written comments on the course. We analysed these written comments as well as students’ and teachers’ reflective journals through thematic analysis of the texts, searching for similarities and differences in how they expressed their experiences of the course (Taylor & Bogdan 1998).

Students’ approaches to learning were examined by the learning process questionnaire (LPQ) (Kember et al. 2004). This questionnaire examines the approaches to learning in two dimensions; deep approach and surface approach, and it also gives information on students’ motives and strategies, which have been shown to co-vary with approaches in the literature. Deep approach, for example, indicates intrinsic interest and understanding, while a surface approach correlates with instrumental motives for learning and rote memorization. The questionnaire has been validated and has good reliability (Kember et al. 2004).

Examples of deep/surface approach items are the following:

- I work hard at my studies because I find the material interesting (high score indicates deep approach).
- I see no point in learning material which is not likely to be in examination (high score indicates surface approach).

The teachers’ course was evaluated using the approaches to teaching inventory (ATI) (Trigwell et al. 2005). This questionnaire has been developed from research using a relational perspective and it has been validated in several studies (Prosser & Trigwell 2006). The ATI was used to examine teachers’ approaches towards teaching and focused on two dimensions: Conceptual change/student-focused and information transmission/teacher-focused (Trigwell et al. 2005).

Examples of information transmission/teacher-focused items are:

- In this course students should focus their study on what I provide them.
- It is important to present a lot of facts to students so that they know what they have to learn for this course.

Examples of conceptual change/student-focused items:

- I see teaching as helping students develop new ways of thinking in this course.
- Teaching in this course should help students question their own understanding of the course matter.

Statistics

All statistical calculations were performed with the Statistical Package for the Social Sciences version 12.0 (SPSS, Chicago IL). Non-parametric statistics (Mann-Whitney-U-test) were used to analyse differences between groups and Fisher’s test for pair comparison. A $p$-value < 0.05 was considered significant.

Ethics

The studies were conducted in accordance with the Ethical Declaration of Helsinki 2002, and approved by the Local Ethics Committee of the Faculty of Medicine at the University of Gothenburg, study code 674-05. Participation was voluntary after giving informed consent and all the material was treated as strictly confidential.

Results

In general, the factual content of the course was the most highly valued element by the students. At the same time, many students expressed the need of having this kind of introduction to higher education. They reported finding it hard to understand the structure and the cultural aspects of higher education and they expected more detailed instructions to guide them in their studies. Others reported that the course had made them aware of their own learning. The teacher groups were positive about the reflective elements, which gave them opportunities to use collegial review acumen.

The evaluation of the student course

Seventy-two percent ($n=104$) of the students in the first course and 94% ($n=118$) of those attending the second course answered the computer-based course evaluation, with structured and open questions. Comments were about outline and content of the course and related to the schedule rather than having something to do with reflection. Comments varied regarding the course and the negative remarks focused on not understanding the aim of the course. The group work, however, was evaluated as the most positive experience, and it was seen as contributing to perceived self-efficacy.
The examination was regarded as relevant, as was the oral presentation of their group work about health, which was reported at the final examination in the form of a conference. At this conference the senior teachers at the faculty, with knowledge of the health problem chosen for the scholarly paper, were invited to discuss with the students. This was highly appreciated by the students. The use of the LMS was positive for most students, and they reported wanting to use it in their forthcoming courses. Opinions regarding the course requirements differed. Some students reported that the demands were too high, but others, who had earlier experiences of university studies, thought that the course was repetitious and too superficial. However, a student with previous experience from the university claimed that:

I have a long way to go to reach university level standards, but I think I can. This does not mean that it is going to be easy. Every course is a trial, perhaps it would be more correct to say that every day is a trial, but it is one step on the road. This course has helped me to understand how these standards can be met. All I have to do now is to use them!

Analyzing the written comments we find at a general level that there are three main approaches to academic studies that could be found in the evaluations. One group of students was positive to large parts of the course. These students were aware of the usefulness of the learning tools for seeking information, tools for research and the activities regarding how to read and structure a scientific article. The most clearly expressed positive view was the value of gaining knowledge of how to seek scientific literature in databases and how to review the texts. This group of students asked for rules and procedural instructions about how to manage their studies in a productive way. They were focused on concrete issues and procedural instructions about how to write reflective journals. The students in this group expressed both positive and negative opinions of the course.

A second group of students was more critical. They argued that the course had been too time consuming and had intruded on what they regarded as the more essential parts of their studies, i.e. their regular study programme. They argued that it was not meaningful to meet students from other programmes, as they had not yet understood the basics of their own profession. They were seeking an identity, which they believed the studies in their professional programme would give them. These students were the most negative, and they found problems and difficulties in most parts of the course. Opinions were not systematic, though. The course was seen as too short, too long, or should be placed first or last in their education, or, alternatively, it should not be given at all.

A third group was overall more positive and argued that the course gave them learning tools for their further studies. They expressed more curiosity for new things and thought the course was a good introduction, although they felt a bit confused in the beginning. However, as the course continued they reported that everything became clearer. They appreciated the group work elements and thought it was interesting and useful to meet students from other programmes. These students may be characterized as showing evidence of a reflective/transformative approach, focusing on transferable or generic skills rather than on specific facts to be learned.

Despite many critical comments, the overwhelming outcome is that the students wanted the course to be made permanent. A student summarized this in the following manner: offering an opportunity to build a bridge between studies at secondary school and studies at university level is valuable.

Students’ reflective journals

The activity of writing reflective journals was appreciated by most students. However, to write with an analytical perspective was perceived as quite demanding and seemed to be learnt gradually as the activity progressed and it was supported through discussions. Many students asked for detailed and specified instructions about how to write reflective journals. They were more interested in learning a subject than to think about how to learn and to reflect about the process of learning. Several students, however, argued in the opposite direction:

Since I started at the university, my role as a student has changed. I am no longer ‘good’ in the same way as before. I am surrounded by people who are so incredibly talented and I have to admit that it is difficult for me to see my good sides. I hope I have helped to make my course mates think that I have put forward some ideas that have helped us to progress. I cannot come up with a definite example, as I rarely see my positive characteristics. This may be wrong, but it is how I am!

I love reflecting, even if my reflections are not always as well structured as they could be, but I have to say that it has been fun to have someone who has questioned my ideas and made me analyse the way I think more in detail. I think that my ability to reflect is in fact a strength. I have read many reflections during my previous education and I have realised that people often think that a reflection has to be correct or that they only reflect by repeating an idea! As I see it, reflection is a way of developing, seeing relationships and increasing my understanding of the people around me.

Both these comments illustrate how the students report taking a metacognitive perspective (Garrett et al. 2007) on their own learning and their own experiences, thus allowing them to position themselves as actors in an academic setting. Facilitating such metacognitive reasoning was an important goal of the courses.

Learning process questionnaire

The LPQ deals with identifying learning styles, deep and surface approaches to learning. The questionnaire was distributed to the students before and after the course. The response rates from the first and the second course were 86% (n = 233) before and 74% (n = 199) after the course. The age range among the students was between 18 and 43 years, mean age 24.4 years. Fourteen percent of the students were male,
and 37% had had previous experience of higher education. We found a significant effect of age in the tendency to report adopting a deep approach to learning \((p=0.01)\), i.e. older students had a deeper motivation for their learning. However, learning strategies did not differ to any significant degree. Female students as a group reported adopting a deep approach more often than male students \((p<0.05)\), whereas male students were significantly higher on the scale for a surface approach \((p<0.05)\). There were no differences in terms of approaches to learning that could be related to the programmes of study attended to, nor were there any differences between groups with respect to previous experiences of higher education. In general, all students had a high score on deep approach. After the course, the students’ rated higher on the following items: I find that at times studying makes me feel really happy and satisfied \((p<0.05)\); I try and relate what I have learned in one subject to what I learn in another subjects \((p<0.05)\), and I like constructing theories to fit odd things together \((p<0.05)\).

The evaluation of the course for teachers

The most appreciated parts of the teachers’ course were the tutoring of the student group and the use of reflective journals. However, many teachers experienced a high workload during the course. The LMS was generally thought to be a good resource for maintaining continuous contact with the students. Some teachers mentioned that after the course they were more focused on the students’ learning. They appreciated the combination of theoretical and practical experiences, and they reported that they had gained a more professional view of education. The teachers who had been a tutor for 8–10 students perceived these groups as too large in number.

Teachers’ reflective journals

As was the case for many of the students, teachers asked for more detailed instructions about how to write reflectively, particularly when they as tutors should use reflective journals in their own student groups. An illustration of experiences gained from reflecting on teaching is given below:

At my workplace, I supervise students every day and, a few weeks from now, I shall be teaching for the first time on the unit’s research course. This course [Learnable] has helped me to understand the importance of giving myself time to reflect on myself as a teacher and supervisor. It is incredibly easy to get caught in a routine of repeating patterns of behaviour and working methods. Reflection can help you to move on and develop and understand the interplay between teacher and student. Prior to this course, I had not even thought about whether I teach in a certain way, using specific frameworks and patterns. I am now asking myself the following questions. Is my way of teaching and supervising good? Are there other ways of organising my teaching? How do I normally formulate myself when I teach? What do I focus on? I still do not know which role reflection is going to play, but I am convinced that it will produce teaching of higher quality. In the future, I shall be doing more teaching and I shall be using this as an instrument to make sure that I do not end up in a rut. Reflection is going to help me to constantly improve as a teacher and this will have a positive impact on education.

The quote illustrates how even experienced teachers may not be used to reflecting on their pedagogical practices. Teaching practices do not appear as something that can be analysed, discussed and developed, but rather as routines that continue as they always have.

Approaches to teaching inventory

The questionnaire was distributed to the teachers before and after the course. The response rates from the first and second courses were 97\% \((n=30)\) before as well as after the courses. The age of the teachers varied from 36 to 62 years with a mean of 48 years. Sixty-nine percent had a previous pedagogical education. Twenty-five percent were male. The approaches to teaching inventory did not give any significant differences according to age or gender. We found a difference regarding previous pedagogical education on the item ‘helping students questioning their own understanding’; this item relates to the conceptual change/student-focused approach. Teachers with previous education in pedagogy scored significantly higher \((p<0.05)\) on this item.

Discussion

The most obvious and useful result from this project was the positive impact of being a tutor for a group of students in parallel to studying pedagogy. It gave the teachers possibilities to practice, evaluate and discuss their teaching performance in a realistic situation both with students, colleagues and teachers in the course. To reflect on both being a student and a teacher, and not only attending a course in pedagogy, encouraged the teachers to be more attentive to and motivated for educational development. A change of the understanding of a teaching situation may lead to changes in teaching and to improved student learning (Drew 2001; Trigwell & Prosser 2004).

There were some findings in the current study that indicate that teachers with previous pedagogical education supported students more in questioning their own understanding. However the group of teachers was small. The result from the Approaches to Teaching Inventory has to be verified with a larger group of teachers. One way of improving educational practice may be to raise teachers’ awareness of their way of acting in pedagogical situations by engaging them in systematic reflection on their teaching practices. Training university teachers teaching skills has been shown to result in improvement in student learning and in a reduction in the tendency to use a surface approach (Gibbs & Coffey 2004).

The study also indicates that a deep approach to the studies among the students was more characteristic of female students and of students who were older. Research in higher education shows that students’ adopt different approaches to study in relation to the learning contexts they encounter. How they learn is to a large extent a response to what they perceive the
academic environment requires. Approaches range from a surface or superficial approach to a deep approach with greater engagement and higher quality learning outcomes (Marton & Säljö 1976; Drew 2001; Biggs 2003; Ramsden 2003).

A positive effect of the students' course was the use of active learning techniques, i.e. using LMS, database seeking, reflective journals, group work, seminars and participating at a conference. Active learning demanded more of the students. They had to be able to apply their knowledge in a situation related to the subject of the course, which was a common problem related to their study programme. From the evaluations of the course, this task was considered valuable by the students, but many of them asked for a more traditional approach to teaching and learning, with more instructions and hard facts communicated through traditional lessons. Students experienced difficulties in taking a greater responsibility for their own learning, as well as in making personal reflections. Reflective writing is a very different form of discursive practice compared to traditional academic teaching in which content is drawn from external sources and not from one's own experiences (Kember 2001; Graffam 2007).

Using an LMS created a new dimension that fused the groups together. On the negative side, however, many students found it hard to participate in the LearnAble activity in parallel to their regular courses, and they lacked a clear understanding of their own subject area to use in the collaboration with students with other backgrounds. This may be a matter of the problem of professional and academic identity, matters that the students were still uncertain about. They all attended programmes that lead to a profession and this was the main focus of attention of many students. An important consequence of these observations may be to focus the introductory course more on professional development in order to initiate reflection on professional identity. The diversity of students' learning needs and expectations (Laing et al. 2005) was obvious in the evaluations; one group was positive to learning different tools, another group wanted a more technical approach, and a third group was in search of an identity. This result will inform the design of future courses.

The teachers evaluated the course more positively than the students. This experience has been reported earlier by Kember (2001), who claims that 'students' resistance to more innovative forms of teaching has been cited as a reason for sticking to didactic teaching' p. 219. Hjørungdal et al. (2006) summarize that teachers seem to be more eager to develop and use new working methods in education than students. It is possible that the need of development is more obvious to teachers, since they work in the educational system and are aware of some of the shortcomings. Students are in the system for the first time, and their priority is often to pass as smoothly as possible. The need of tools for lifelong learning may not be a high priority at this point of time for the students.

A further valuable lesson learnt from the project was the implementation of the 'Bologna process' and teaching of generic skills at the first cycle of university studies. We think that a cumulative building of generic skills is necessary during the three cycles of university studies, and that it is suitable to introduce these skills at the beginning of each cycle and practice these skills in more subject related courses.

Changing an established education culture at a university, as well as preconceived ideas about how to learn, is of course a slow and long-term project. The key to a successful transition to higher education may be just to allow for time and to provide continuous support to students and teachers (Kember 2001). Most people find change of any sort to be difficult to adapt to, and, consequently, when new forms of teaching and learning are introduced, it is important to address the issue of implementing the change and allow time to make the transition. The effects of this change of curricula have to be followed up in a long-term perspective. Perhaps we do not see the real effects before the end of the professional programme or in professional work.

Conclusions

No single set of introductory activities will suffice to meet the needs and concerns of all students. An iterative process where learning is discussed is necessary for a reflective approach to learning to emerge. Therefore, components of an introductory process must be continuously developed and revised at all cycles of higher education (Bryngfors & Barmen 2003).

We have started a process of development and evaluation of learning and teaching of generic skills. The most evident result from this project was the interaction between students and teachers, the positive impact of being a tutor for a group of students in parallel to a course for teachers. That a deep approach to the studies among the students was related to higher age, and the finding that those teachers with previous pedagogical education facilitate students more to question their own understanding, show the impact of earlier experiences in the learning/teaching situation. Students' different approaches to learning need to be taken into account and supported into a more functional understanding of the learning process.

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