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The effect of discipline on motivational and self-efficacy beliefs and on approaches to teaching of Finnish and English University teachers

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Abstract

The purpose of this study is to examine the effect of disciplines and nationality on self-efficacy beliefs of teachers, on motivational factors in teaching, and on approaches to teaching. This research focuses on teachers' approaches to teaching and the two main approaches that have been distinguished: the teacher-focused and student-focused approaches to teaching. Teacher-focused teachers, on one hand, value the transmission of content of subject as the basic element of teaching. Student-focused teachers, on the other hand, emphasise their students' learning as a main goal of their teaching. The relationships between the disciplines and approaches to teaching has been explored only recently and mainly by small case studies. Teachers differ in their self-regulatory skills (e.g. self-regulation versus external regulation) to manage the teaching and learning processes. Teachers' self-efficacy beliefs concern their conceptions of themselves as academically competent teachers. Teachers' interest to teaching varies and thus the involvement in the teaching process is experienced differently according to the perceived value of teaching activity. University teachers struggle between the demands of their research work and teaching, and this affects their involvement to teaching. Teachers' approaches to teaching and learning also vary. The data of this study consists of surveys and interviews of the teachers of different disciplines at the University of Helsinki. The comparisons between Finnish and English university teachers from different disciplines in order to explore how discipline and different university backgrounds affect the teachers' motivational and self-efficacy beliefs as well as approaches to teaching.

Introduction

Self-efficacy and teaching

Albert Bandura (2000, 36-37) defines self-efficacy as “a generative capability in which cognitive, social, emotional, and behavioural sub skills must be organized and effectively orchestrated to serve innumerable purposes”. Perceived self-efficacy is not beliefs concerning the skills and abilities a person has, but rather a belief to perform using one's skills and abilities adequately in certain circumstance. (Bandura, 2000.) Therefore, because of the context-specific nature of self-efficacy beliefs, a university teacher may have strong beliefs when teaching in a familiar teaching situation, but may feel uncertain about his or her abilities to teach well in an unfamiliar teaching situation or in front of highly demanding audience.

Our another study shows that pedagogical training has an effect on teachers' self-efficacy beliefs. The more pedagogical training the teachers had, the higher they scored on the self-efficacy scale (Postareff, Lindblom-Ylänne & Nevgi, 2004).

The studies on self-efficacy are numerous and, particularly, the work of Albert Bandura during last decades has been exhaustively detailed and broad. The research on teachers' self-efficacy beliefs and on their conceptions of what constitutes qualitatively good learning are mainly done with school teachers and similar research of self-efficacy beliefs of teachers' in higher education is scarce. Research conducted with school teachers of their instructional efficacy and learning outcomes of their students' indicates that teachers with higher self-efficacy tend to have better learning outcomes with their students (Bandura, 2000). According to Bailey (1999) gaining higher qualifications increased one's motivation and self-efficacy for doing research. He also found that women had higher motivation for course assessment than men and that women also showed higher motivation for course delivery. However, he did not find any differences in female and male teachers' self-efficacy beliefs. Furthermore, he found no differences in self-efficacy beliefs for teaching according to academics' position, faculty, and level of appointment. (Bailey, 1999). There is also evidence that teachers with high self-efficacy beliefs are likely to select more efficient teaching practices, which lead to better learning outcomes, than teachers with low self-efficacy (Gordon & Debus 2002)

Faculty and discipline

The faculties are comprised of similar disciplines. However, there are also faculties, which are created only for administrative purposes. In medieval times, the universities were divided into disciplines of theology, law, medicine and philosophy. In the course of time, the first three disciplines have remained as such, but the discipline of philosophy has been further divided into humanities and art, mathematical and sciences, behavioural sciences, education, social sciences life and environmental sciences, and agriculture and forest. There are many variations of these divisions in different countries and different universities.

Disciplines are most commonly divided into four groups following the work of Biglan (1973) and Becher (1989): "pure hard", "applied hard", "pure soft" and "applied soft". Neumann et al (2002) have described how the hard, pure, soft, and applied sciences differ in their structures of knowledge. *Pure hard* knowledge is described as a cumulative, quantitative and atomistic. Mathematics, physics and chemistry are examples of pure hard sciences. At the University of Helsinki the Faculty of Sciences represents these disciplines. The information in pure hard

sciences can be presented in quantified forms and exact definitions of the phenomena under the research. Knowledge communities tend to be competitive, but sociable, and the joint or multiple authorships tend to be common. The instruction methods are commonly lectures with practices, in the lectures the information is delivered to students to be applied in practices. On the other hand, *pure soft* knowledge is reiterative, holistic, concerned with details and having qualitative favouritism. Thus, the form of knowledge is strongly opposite to pure hard knowledge. History, arts, and aesthetics are exemplars of pure soft disciplines. There is no sense of out-dated knowledge, as in pure hard disciplines, but knowledge is built by solitary pursuits of single scholars, and academics of the field have rarely overlapping research interests. The instruction of the disciplines is commonly based on lectures but with strong emphasis on discussions and students own enterprise for learning. At the University of Helsinki, the Faculty of Humanities and partly the Faculty of Social Sciences (e.g., sociology and cultural anthropology) stand for pure soft disciplines. According to Neumann (2002), *applied hard* sciences are described as having enquiry methods from pure hard sciences but the aim of research is to master the physical environment (nature, human body and mind). Medicine and engineering are examples of applied hard disciplines. Knowledge is cumulative and applicative, and empirical evidence is essential. At the University of Helsinki, the Faculties of Medicine, Veterinary Medicine, Pharmacy, and Agriculture and Forestry stand for this field. The *applied soft* sciences derive their theory mainly from pure soft knowledge, being concerned of procedures and practices of the field. According to Neumann (2002), applied soft sciences have communities with gregarious emphasis, and the research and teaching are interactively involved. At the University of Helsinki the Faculties of Behavioural Sciences, Theology, and Law represent this field.

Teaching in different disciplines

Research has mainly focused on the differences in research practices of different disciplines, and the teaching practices in different disciplines have been practically overlooked (Neumann, 2001). According to Neumann (2001), lectures, tutorials and seminars, practicums, and laboratory practicals are the main teaching methods in most universities. Furthermore, different applications of group learning have increased in recent years as study methods, such as problem-based learning and collaborative learning, are more and more broadly used. However, the lecture seems to be the

dominant teaching mode through different disciplines in universities (Ballantyne et al 1999). The lecture is often considered as a teacher-focused method of teaching, although the lectures can be applied in student-focused and teacher-focused ways both in student-focused or in teacher-focused approach.

The aims of the present study are twofold. Firstly, the aim of this study is to analyse the differences in self-efficacy beliefs, motivational strategies, and approaches to teaching of university teachers between two countries, namely Finland and UK. Secondly, the aim is to analyse in more detail the differences in aspects mentioned above among different disciplines.

Method

Participants

The participants were 204 teachers from University of Helsinki and Helsinki School of Economics and Business Administration, and 136 teachers from University of Oxford. The Finnish teachers had 61 males and 136 females. The mean age of Finnish teachers was 40.7 years (SD = 8.4 years). Ten participants did not reveal their age. Teachers' academic status ranged from an assistant to a professor. Sixty-two teachers described themselves as experienced researchers with a doctoral degree, and 23 teachers evaluated that they had achieved a status of internationally advanced researcher. Fifty-seven teachers were doctoral students and 41 teachers had a Master's degree. Eleven teachers told that they could not define their academic status, and ten teachers did not report their academic background. The teachers' teaching experience varied from one to 35 years, and half of the teachers had less than 6.0 (Md) years teaching experience. Teachers' pedagogical training varied between no-training (86 teachers) and competent teacher (13). Thirty-six teachers had not participated in any pedagogical training. From teachers who had pedagogical training, 75 had short courses for less than 10 ECTS, and 58 teachers had completed a short course of 10-12 ECTS or had continued their studies of teaching in Higher Education even further, but less than 30 ECTS. Thirty-one teachers had completed 30 ECTS or more.

Teachers represented quite equally both human sciences 92 (47.2 %) and natural sciences 102 (52.5 %). Ten teachers did not report their discipline. Teachers who represented human sciences were from theology (13), law (15), humanities and art (30), education and behavioural science (9), social sciences (22), and economics

(3). The teachers who represented natural sciences came from medicine (18), mathematics and science (20), agriculture and forest (36), veterinary (19), and pharmacy (9). In addition to Finnish sample, 136 teachers from the University of Oxford participated in this study. At the University of Helsinki, the faculties stand quite closely for the disciplines. In this study the most of the faculties of University of Helsinki are represented. In addition, the discipline of business and administrative science represents the Helsinki School of Economics and Business Administration. The University of Oxford has five academic divisions with their main constituent units. For Humanities division in the University of Oxford is included the unit of Theology, which in the University of Helsinki is a faculty.

Materials

The respondents were asked to fill University Teaching Inventory (UTI) designed by Keith Trigwell, Paul Ashwin and Sari Lindblom-Ylänne. The purpose of the Inventory is to explore teachers' approaches to teaching and their self-efficacy beliefs and experienced meaningfulness of teaching. First part of the inventory consists of Approaches to Teaching Inventory developed by Alan Prosser and Keith Trigwell (Prosser and Trigwell 1999; Trigwell, Prosser and Waterhouse 1999). The inventory consists of 16 items which aim to measure the information transmission/teacher-focused and conceptual change/student-focused approaches to teaching. Both the teacher-focused and student-focused approaches are further divided into two subscales of intention and strategy. Thus the four sub-scales can be formed: information transmission intention, teacher-focused strategy, conceptual change intention and student-focused strategy.

In the second (and new) part of this inventory, items on other aspects of teaching were derived from two student learning inventories in developing new teaching inventory items. From the work of Vermunt and colleagues we have derived items from the Self Regulation, External Regulation and Lack of Regulation subscales which are included in two of his inventories: the Inventory of Learning Styles (ILS) (Vermunt and van Rijswijk, 1988) and in the Inventory of Perceived Instructional Activities (IPIA) (Vermetten, et al, 1999). From the work of Pintrich and colleagues, we have derived items from the Self Efficacy and Task Value subscales of the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, et al., (1989). A

total of 14 items (Table 1) were tested using a 5-point Likert scale from strongly disagree to strongly agree.

Table 1. Motivation and regulation items, and origins of those items.

Regulation strategies

	<i>Teaching Items</i>	<i>Learning items from Vermetten, et al (1999)</i>
18	In this course it is difficult for me to know whether I have taught successfully.	20. I notice it is difficult for me to determine whether I have mastered the subject matter sufficiently
20	When I am not satisfied with aspects of my teaching in this course, I try to analyse how I could improve it.	31. When I have difficulty grasping a particular piece of subject matter, I try to analyse why it is difficult for me
25	I am often uncertain about how I should teach this course.	8. I realise that it is not clear to me what I have to remember and what I do not have to remember
27	I tend to teach all my courses in the same way.	5. I study all the subject matter in the same way
32	I feel that the tradition of teaching in my department largely determines how I teach.	[47. I use the instructions and the course objectives given by the teacher to know exactly what to do.]

Self efficacy

	<i>Teaching Items</i>	<i>Learning items from Pintrich et al (1989)</i>
17	I am confident that my knowledge of this subject matter is not a barrier to teaching it well.	17. I am confident I can understand the most complex material presented by the instructor in this course.
19	I am confident that students will learn from me in this course.	13. I am confident I can learn the basic concepts taught in this course.
21	I am certain that I have the necessary skills to teach this course.	32. I am certain that I can master the skills being taught in this class.
30	I am confident that my knowledge of teaching is not a barrier to teaching well.	7. I am certain I can understand the most difficult material presented in the readings for this course.

Task Value

	<i>Teaching Items</i>	<i>Learning items from Pintrich et al (1989)</i>
23	I make use of my teaching experiences from other courses when teaching this course.	5. I think I will be able to use what I learn in this course in other courses.
24	I am very interested in the content of this course.	19. I am very interested in the content area of this course.
26	I like teaching the subject matter of this course.	28. I like the subject matter of this course
28	It is important to me that my teaching of this course leads to student learning.	11. It is important for me to learn the course material in this class
31	It is important to me that students learn about the subject matter of this course.	29. Understanding the subject matter for this course is very important to me

The five items related to regulation strategies (from Vermunt's Metacognitive Regulations Strategies Scale) are designed to capture elements of teachers' self-regulation, which include their decisions concerning approach to teaching made on the basis of reflective analysis of teaching; teachers' external regulation which includes the extent to which approaches are determined by external factors such as 'teaching by the book', adopting other teachers' way of teaching without analysis, adopting the department's teaching culture without analysis, all with a degree of inflexibility; and the teachers' lack of regulation which includes the degree of uncertainty about how and what to teach.

Elements (Self Efficacy and Task Value) of the two paths of the components of motivation model (Pintrich, 1988) were also adapted for teaching. Teachers' beliefs about their ability to perform their academic tasks are known to relate to the outcomes of those tasks (Bailey, 1999). Involvement with teaching (as with learning) is related to the perceived value of the activity, and this includes interest (two items), utility (one item) and importance (two items) components.

Data analyses

The Finnish and English teachers (N = 340) were divided into four groups of pure hard (39), pure soft (76), applied hard (97), and applied soft (91), and 37 teachers did not report their discipline or subject. The following sum scales were calculated: self-efficacy of teaching (four items), lack of regulation in teaching (two items), importance of student learning (two items), and interest in teaching the subject (two items), information transmission/teacher-focused approach (seven items), and conceptual change/student-focused approach to teaching (eight items). The reliability of sum scales was examined with Cronbach's alpha, which measures how well a set of items measures a single one-dimensional latent construct. The sum scales do not reach the .80 that is considered to be good or acceptable. However, the alpha reaches the .70 or more for the self-efficacy beliefs (.72), interest in subject content (.78), information transmission / teacher-focused approach to teaching (.71), and conceptual change / student-focused approach to teaching .77. The reliability of information transmission / teacher-focused scale with eight items in Finnish data was .70, but in the combined data the reliability reduced with eight items to .67. When examining the items, the item a13 revealed to reduce homogeneity, and it was excluded from the sum scale. The reliability of information transmission / teacher-focused approach to

teaching with seven items in combined data was .71, and so for the analysis the sum scale with seven items was selected. The sum scale for lack of regulations consists of two items (Alpha = .46), and the Alpha remains under .50 and thus the consistency of sum scale is very weak. The sum scale was calculated, and it is used with consideration of the uncertainty. The validity of inventories is discussed more detailed in another paper presented in this conference (Nevgi & Lindblom-Ylänne 2004). The reliability of sum scales is presented in the table 2.

Table 2. The reliability of sum scales

Sum scales	Items	Alpha	N
SELF-EFFICACY	four items	.72	333
LACK OF REGULATION	two items	.46	336
IMPORTANCE	two items	.51	335
INTEREST	two items	.78	339
ITTF	seven items	.71	321
CCSF	eight items	.75	319

The relations between self-efficacy, motivational factors and approaches to teaching were explored with correlation analysis using, first, the combined data of both countries and, second, the Finnish and English data separately. Motivational factors related to interest in teaching and importance of student learning, and lack of regulation in teaching between the Finnish and English teachers were examined by independent samples t-test. Analyses of variance (ANOVAs) were used to explore the effect of disciplines and countries on the approaches to teaching, self-efficacy beliefs, and motivational factors.

Results

The relationships between self-efficacy, motivational factors and approaches to teaching

Correlation analysis was used to examine the relations between self-efficacy, motivational factors, and teaching approaches of Finnish and English teachers. Self-efficacy beliefs correlated negatively ($r = -.48$, $p \leq .000$) with lack of regulation in teaching in both teacher groups (see Table 3). For English teachers this connection was higher than for Finnish teachers. The higher a teacher scores on the self-efficacy beliefs, the less a teacher reports regulation problems in her/his teaching. Self-efficacy beliefs correlated positively with interest in teaching ($.20$, $p \leq .000$) and with importance of student learning ($.16$, $p \leq .01$). Teachers from UK, who were interested in the subject to be taught, and considered their students' learning important, scored also highly on the self-efficacy scale. However, similar findings could not be found in the Finnish sample. Finnish teachers with high self-efficacy beliefs tended to score highly on the information transmission / teacher-focused scale ($r = .24$, $p < .000$), but in the English sample, the correlation was non-significant.

Table 3. The correlations of self-efficacy, teaching approaches and motivational factors in Finnish and English Data

	Data (N)	Interest	Importance	Lack reg	ITTF	CCSF
Self-efficacy beliefs in teaching	F (204)	.10	.09	-.44**	.24**	.01
	E (136)	.32**	.28**	-.56**	.05	-.01
Interest in teaching the subject	F (204)		.14*	-.15*	-.13	.45**
	E (136)		.33**	-.23**	-.02	.24**
Importance of student learning	F (204)			-.03	.27**	.09
	E (136)			-.07	.02	.15
Lack of regulation in teaching	F (204)				-.07	-.10
	E (136)				-.02	-.07
ITTF	F (204)					-.32**
	E (136)					-.26

F = Finnish Data, E = English Data

* $p \leq 0.01$, ** $p \leq 0.001$

The relation between approaches to teaching was negatively correlated ($r = -.27$, $p \leq .000$), but this was derived mainly from the Finnish data, where the negative correlation was higher ($r = -.32$, $p \leq .000$). For English teachers there was also a negative correlation between the two approaches to teaching, but the correlation was not significant.

The effect of discipline to self-efficacy beliefs, motivational factors, and approaches to teaching

The teachers were divided into four groups of disciplines using Biglan’s categorisation of pure hard (N = 39) and soft (N = 76), and applied hard (N = 97) and soft (91) (see Table 3). The one-way ANOVA design was used when examining the effect of discipline (four groups) to self-efficacy beliefs, motivational factors, and approaches to teaching. The results revealed a significant main effect for information transmission /teacher-focused approach to teaching [$F(3,298) = 5.90$, $P = 0.001$], and conceptual change / student-focused approach to teaching [$F(3,298) = 8.45$, $P = 0.000$]. In the following Table 4 are presented the means, standard deviations, and significance testing (F-value) for self-efficacy, motivational factors, and teaching approaches by disciplines.

Table 4. The significance testing of self-efficacy, motivational factors, and teaching approaches by disciplines.

		Group 1 (n39) Hard Pure	Group 2 (n76) Soft Pure	Group 3 (n97) Applied Hard	Group 4 (n91) Applied Soft	F (p)
Self- efficacy	M	4.24	4.16	3.99	4.13	1.76
	SD	0.73	0.65	0.68	0.52	(0.154)
Interest	M	4.31	4.66	4.48	4.51	2.54
	SD	0.82	0.54	0.63	0.70	(0.056)
Importance	M	4.68	4.67	4.70	4.69	0.10
	SD	0.49	0.43	0.41	0.44	(0.960)
Lack of reg	M	2.24	2.34	2.33	2.55	1.69
	SD	0.95	0.89	0.80	0.83	(0.170)
ITTF	M	3.03	2.81	3.25	2.97	5.90
	SD	0.79	0.60	0.68	0.78	(0.001)
CCSF	M	3.40	4.00	3.62	3.86	8.45
	SD	0.78	0.58	0.69	0.74	(0.000)

The results show that the means of information transmission / teacher focused approach to teaching and conceptual change / student focused approach to teaching varies significantly across the disciplines. Teachers from pure hard and applied hard fields have higher values for teacher-focused approach than teachers from pure soft and applied soft. Teacher from pure hard have lowest mean for conceptual change / student focused approach to teaching scale than other teachers. Teachers from applied soft have reported highest values for lack of regulation in teaching, though this is not significant. Standard deviations of lack of regulation scale reveal that teacher in all disciplines have the greatest variation in this scale compared with other scales. Teachers in all disciplines owe the most homogeny view of the importance of student learning. Teachers differed in their self-efficacy beliefs according to their discipline ($F = 5.26$, $p\text{-value} = 0.001$). Teachers of applied hard had higher values ($M = 4.21$) in their self-efficacy beliefs than teachers of pure hard ($M = 3.88$). Difference between the means was statistically significant according to Scheffe ($p < .01$). Teachers with higher values in information transmission/teacher-focused approach to teaching tend to have stronger self-efficacy beliefs of teaching ($r = .09$, $p\text{-value} 0.03$). Finnish teachers have higher self-efficacy beliefs ($M = 4.11$) concerning their teaching than do their English colleagues ($M = 3.94$) have ($F 4.187$, $df 325,1$, $p\text{-value} 0.042$).

The differences of Finnish and English University teachers in self-efficacy belief, motivational factors, and approaches to teaching

The following step of analysis was to examine by independent samples t-test the differences between Finnish and English teachers in their self-efficacy beliefs, interest in teaching, importance of student learning, lack of regulation in teaching, and in approaches to teaching. The means, standard deviations and t-values with significance testing for these are presented in the following Table 5.

Table 5. Differences between Finnish and English teachers in their self-efficacy beliefs, motivational factors, and teaching approaches (means, standard deviations, and t-values with significance testing)

		Finnish Teachers (<i>n</i> =204)	English Teachers (<i>n</i> =136)	t-value (<i>p</i>)
Self-efficacy	<i>M</i>	4.05	4.19	-1.96
	<i>SD</i>	0.62	0.67	(0.051)
Interest	<i>M</i>	4.47	4.58	-1.47
	<i>SD</i>	0.64	0.66	(0.143)
Importance	<i>M</i>	4.71	4.65	1.34
	<i>SD</i>	0.42	0.44	(0.182)
Lack of regulation	<i>M</i>	2.29	2.49	-2.12
	<i>SD</i>	0.80	0.88	(0.035)
ITTF	<i>M</i>	3.30	2.68	8.27
	<i>SD</i>	0.70	0.62	(0.000)
CCSF	<i>M</i>	3.77	3.74	0.43
	<i>SD</i>	0.73	0.69	(0.666)

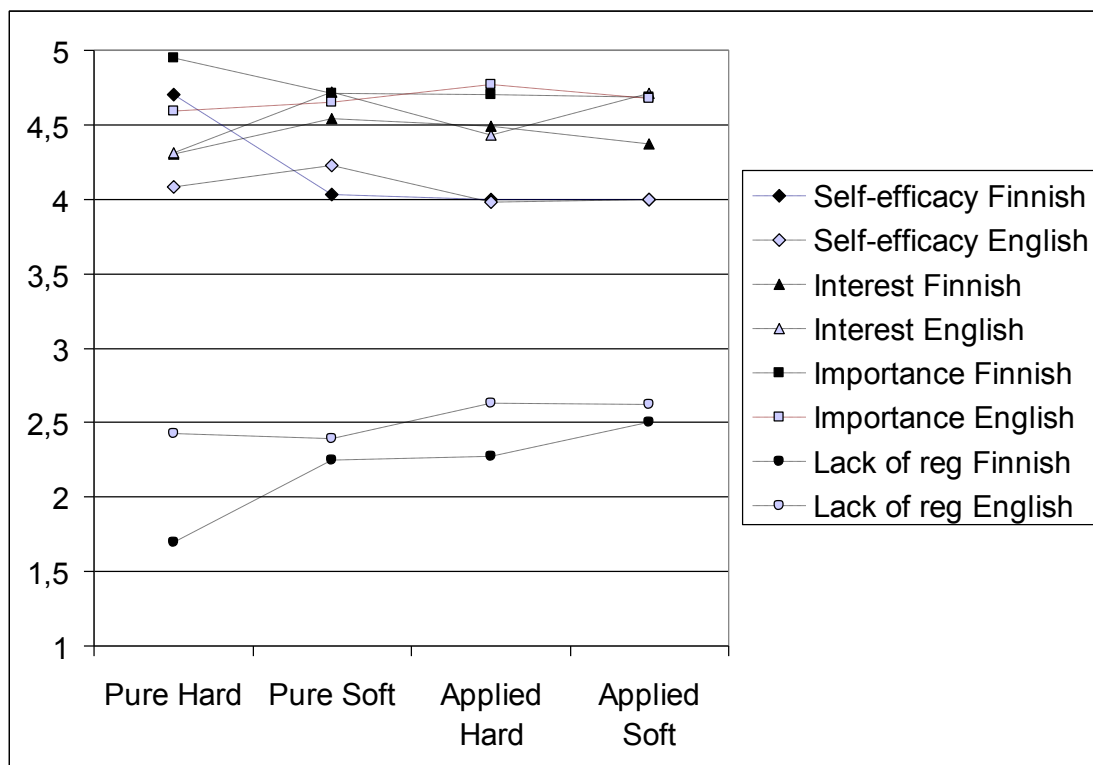
The English teachers had higher values in self-efficacy beliefs ($M = 4.19$, $SD = 0.67$) than the Finnish teachers ($M = 4.05$, $SD = 0.62$), although the difference between the teacher groups did not quite reach the statistically significant level ($p = 0.051$). Furthermore, the English teachers scored higher on the lack of regulation scale ($M = 2.49$, $SD 0.88$) than the Finnish teachers ($M = 2.29$, $SD 0.80$). The difference between the teacher groups of two countries was statistically significant (t-value -2.12 , $p = 0.035$). The Finnish teachers were more teacher-focused ($M = 3.30$, $SD 0.70$) than the English teachers ($M = 2.68$, $SD 0.62$). However, the Finnish and English teachers did not differ in the conceptual change / student focused approach.

In order to answer the question whether these differences between the two countries were similar across the discipline groups, and whether the differences found by independent samples t-test were due to the different teaching culture in the two universities of Helsinki and Oxford, a two-way 4 (discipline groups) x 2 (countries) ANOVA was performed using main effect model on the scores on self-efficacy beliefs, interest in teaching, importance of student learning, lack of regulation and approaches to teaching.

The model for *self-efficacy* explained by country and discipline field was not significant [$F (1,298) 1.70$, $P = 0.151$], and neither the model for *importance* of student learning [$F (3,298) = .26$, $P = 0.899$]. Teachers in both countries and in all

disciplines valued highly the importance of student learning as a motivating factor in teaching. The examination of main effect of disciplines and country to *interest of subject content* as a motivational factor of teaching revealed to be significant [F(3,298) = 2.90, P = 0.022]. The significant effect of discipline [F(3,298) = 3.91, P = 0.048, Partial Eta Squared = 0.026] and country [F(3,298) = 3.91, P = 0.49, Partial Eta Squared = 0.013] was found. Both Finnish and English pure hard and applied hard disciplines the teachers scored similarly on the interest teaching, but the Finnish teachers representing the pure soft and applied soft disciplines scored lower on the interest in teaching than the teachers from UK.

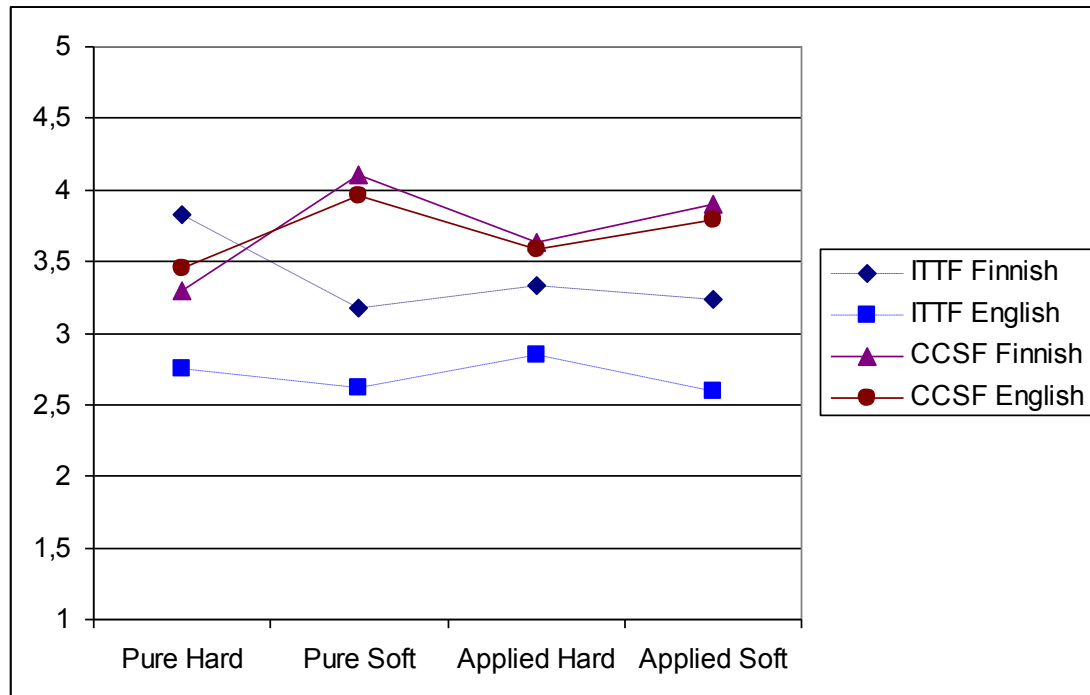
Figure 1. Scores of self-efficacy, importance of student learning, interest of subject content, and lack regulation in teaching of the four discipline groups for Finnish and English teachers (scale 1-5)



When examining differences in the lack of regulation scores in different the disciplines and the two countries, a significant main effect was found [F(3,298) = 2.61, P = 0.036]. Further analyses revealed that this was mainly due to the country

[F(3,298) = 5.30, P = 0.22], and the effect of discipline did not reach significant value [F(3,298) = 2.29, P = 0.079]

Figure 2. Scores of teacher-focused approach (ITTF), and student-focused approach (CCSF) of the four discipline groups for Finnish and English teachers (scale 1-5)



When examining the effect of discipline and country to teaching approaches, the significant main effects were found for both student-focused [F(3,297) = 6.49, P = 000] and teacher-focused [F(3,297) = 19.09, P = 000] approaches to teaching. When the effect of the country was examined for the student-focused approach, no significant effect was found. The Finnish and the English teachers in different disciplines did not differ from each other in terms of the student-focused approach to teaching, as can be seen in the Figure 1. However, the discipline had a significant effect on student-focused approach [F (3,297) = 8.65, P = 000]. In both countries, the teachers representing pure and applied soft disciplines scored higher on student-focused approach than teachers from pure and applied hard disciplines.

Finally, an interesting question of whether there was differences in disciplines in a more detailed level, arose. The effect of discipline on approaches to teaching, self-efficacy beliefs and on motivational factors was analysed in more detail by categorising the disciplines into nine groups: 1) theology (n=14), 2) law (n=18), 3) medicine and engineering (n = 32, the five teachers of engineering were combined

with the medicine, because both disciplines can be categorised as applied hard sciences), 4) humanities and art (n=64), 5) mathematics and science (n=54), 6) behavioural science (n=18, into this category the teachers of teacher training, education and psychology were included), 7) social sciences (n=39), 8) agriculture and forestry (N=59, into this category also the teachers of veterinary were included, because they represent the life and nature sciences), 9) and business and management (n=14).

The one-way analysis of variance (ANOVA) with an independent variable of disciplines classified into nine categories was conducted to examine the effect of disciplines to self-efficacy beliefs, importance of student learning, interest of subject content, lack of regulation, and teaching approaches.

For the *self-efficacy beliefs* of teaching a significant main effect was found [$F(7,303) = 2.90, P = 0.004$]. Tukey's post hoc tests with its significant procedure ($\alpha = 0.05$) were used for comparisons among the disciplines and self-efficacy beliefs. The comparisons showed that teachers of mathematics and science ($M = 4.30, SD = 0.61$) scored higher on self-efficacy beliefs than teachers from law ($M = 3.77, SD = 0.58$), and agriculture and forestry ($M = 3.89, SD = 0.74$). The Scheffe's post hoc test did not verify the differences between the means to be significant for any groups. The Law teachers scored lowest in self-efficacy beliefs. Differences between the disciplines were not found for the importance of student learning and the interest of teaching.

When examining the effect of disciplines on *lack of regulation*, a significant main effect was found [$F(7,303) = 3.19, P = 0.002$]. Further examination with Tukey's post hoc tests with its significant procedure ($\alpha = 0.05$) revealed that the law teachers scored significantly higher on lack of regulation than other teachers except for the teachers of business and management. With Scheffe's post hoc test a significant difference remained between the law teachers and the mathematic teachers (0.022), and between the law teachers and the teachers of agriculture and forestry (0.036) revealing that the law teachers had more difficulties in their regulation of teaching than the teachers of mathematics and sciences or teachers of agriculture and forestry.

The examination of effect of disciplines to the teacher-focused approach revealed a significant main effect [$F(7,302) = 2.26, P = 0.023$]. Further examination with Tukey's honestly significant difference test (0.05) revealed that the teachers of

mathematics and sciences differed significantly from the teachers of law (0.043) and from teachers of agriculture and forest (0.031). The teachers of mathematics and science were the most teacher-focused in their approaches to teaching. However, Scheffe's post hoc test did not verify the differences between the disciplines in the teacher-focused approach. One-way ANOVA (nine disciplines) for the student-focused approach showed the significant main effect [$F(7,302) = 4.56, P = 0.000$]. Further examination with Tukey's post hoc test tests with its significant procedure ($\alpha = 0.05$) exposed that teachers of theology scored significantly higher (0.023) on student-focused approach than teachers of medicine and engineering, and also higher (0.023) than teachers of mathematics and science. The teachers of humanities and art differed significantly (0.012) from the teachers of medicine and engineering, and also from the teachers of mathematics and science, scoring higher on student-focused approach than the teachers of other disciplines. Teachers from social sciences scored significantly higher (0.007) than teachers from medicine and engineering in student-focused approach, and as well they scored significantly (0.004) higher than teachers from mathematics and science. When examining the significance of differences using Scheffe's post hoc test, no significant differences were found.

The effect of gender to self-efficacy beliefs, motivational factors of teaching, and to teaching approaches

For analysing gender differences, only the Finnish teachers ($N = 204$) were selected, because the information about gender was unavailable for the English teachers. In this study, the differences between male and female teachers in the self-efficacy beliefs was explored with the independent samples t-test, which revealed that the women ($M = 3.98, SD = 0.65$) scored significantly lower on self-efficacy ($t = 2.98, df 152.1, P = 0.014$) than men ($M = 4.19, SD = 0.048$).

The relationship between gender and discipline was examined in more detail with two-way ANOVA using gender (two groups) and disciplines (four groups) as independent variables and self-efficacy in teaching as dependent variable. The significant main effect was found for the model [$F(1, 165) = 5.11, P = 0.001$]. The discipline and the gender had both significant main effects on self-efficacy beliefs. Women in all four discipline groups scored lower on their self-efficacy beliefs than men. The women from pure hard sciences scored higher on their self-efficacy beliefs

than women from other discipline groups. Similarly, men from pure hard sciences scored higher on self-efficacy beliefs than men from other discipline groups. Between women and men, no differences were found in the importance of student learning, interest of subject content, and in regulation of teaching.

Women and men differed significantly in their approaches to teaching. Men scored significantly (t -value = 2.33, df = 137.8, P = 0.021) higher on teacher-focused approach (M = 3.65, SD = 0.62) than women (M = 3.41, SD 0.41). The further examination with two-way ANOVA (gender, four disciplines) revealed that the difference between men and women in teacher-focused approach was not significant in the four discipline groups. The main effect remained statistically non-significant [$F(1,165) = 2.08, P = 0.086$].

Discussion

Finnish teachers scored higher on the teacher-focused approach than the English teachers. However, no differences were found between the teachers from the two countries in the student-focused approach to teaching. The difference in teacher-focused approach may derive from the different teaching culture. The Finnish teachers may give more emphasis on lecturing and provide fewer opportunities for discussions during lectures/ teaching sessions than in the teachers of UK. In general, the English teachers were more student-focused than the Finnish teachers.

The English teachers reported more problems in their regulation of teaching, and this may be related higher scores on the student-focused approach. These teachers may have more problems in organising their teaching in a student-focused way. There may also be differences in teaching cultures of these two countries.

The disciplines had the effect on approaches to teaching, and this effect was similar in the both countries, revealing that the basic teaching cultures of disciplines are global and that disciplines explain more the differences in teachers' approaches to teaching than the nationality of teachers.

Gender differences were found in self-efficacy beliefs of teaching. Women tended to have less self-confidence in teaching than men. It is possible that women are more critical when evaluating themselves than men. The studies of the self-concept and the expectation of success in studies (Nevgi 1998) have proved that women evaluate themselves with higher critics considering the success in studies to be

achieved by good luck, but the failing in the studies due to their own ability, when men, vice versa, evaluate the success in studies to be achieved by their own effort and failure in studies is due to the bad luck in test situation.

In this study the differences between the two countries were found. The findings would suggest the need of comparative research on self-efficacy beliefs, and approaches to teaching, especially on the topic of the cultural differences in university teaching.

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