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Students' intrinsic and extrinsic motivation to study

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The below text was presented at the *Chalmers KUL2013 Conference on Teaching and Learning* held January 16th 2013 at Chalmers. The aim of the conference was four-fold:

- enhance the educational quality by promoting collegial discussions on teaching and learning,
- teachers getting opportunity to get feed-back on their own teaching,
- teachers getting a close arena to gain pedagogical qualifications, and
- offering an opportunity to share experiences of Constructive alignment at program and course level.

A requisite for submitted texts was that they would need to include aim and research questions, connection to earlier research, method description, presentation of results, discussion and reflections with a total maximum of only 500 words (in fact, the below text is 582 words excluding title, author address, figure and caption, and references).

A challenge faced by university teachers is to enable the students to strive for mastery rather than just mere ability (Butler, 2000), thus to enable them to prefer improving their learning rather than only preferring to maximizing their grades. The Motivated Strategies for Learning Questionnaire (MSLQ) is an instrument designed to assess university students' motivational orientations and their use of learning strategies for academic courses (Pintrich *et al.*, 1991, 1993). The full instrument consists of 81 questions constituting 15 indexes, and where students are to answer using a 7-point Likert scale.

Two of the MSLQ indexes regard intrinsic goal motivation (IGM) and extrinsic goal motivation (EGM), i.e. to which extent students are motivated to learn (IGM) and to get good grades (EGM). It must be recognized that these motives are not necessarily dichotomous (i.e. either-or) and we could for instance expect some individuals to be high on both motives, although some research report that they are incompatible (e.g. Lepper *et al.*, 1973).

Lin, McKeachie and Kim (2003) reduced the IGM and EGM indexes of the MSLQ to consist of only two questions each, and then used this revised instrument to study their correlates to grades for 578 American and 72 Korean college students. Their result showed that students in the mid-third of the distribution of extrinsic motivation (grades) who also where high in intrinsic motivation achieved better grades than students with higher or lower extrinsic motivation.

The purpose of this study is to replicate the Lin, McKeachie and Kim study in the context of Chalmers. Data was collected during 2012 in three Master level-courses, where one course consisted of Management of Technology students (“I”; IPR010), one course mainly consisted of Physics students (“F”; TIF180), and one course mainly consisted of Software Engineering students (“D&IT”; TEK365). The students did two kinds of tests, one declarative and one analytical. In the declarative test they were to remember the contents of a book, and in the analytical test they were to analyse two complex organizational problems.

		Goal orientation		Test performance	
		Intrinsic	Extrinsic	Declarative	Analytical
Course	All (n=120)	5.86 (.81)	3.60 (1.49)	65.19 (16.75)	73.72 (11.82)
	IPR010 (n=59)	5.94 (.70)	4.13 (1.43)	71.06 (17.06)	77.50 (9.92)
	TEK365 (n=38)	5.79 (.92)	3.26 (1.36)	56.32 (11.56)	73.06 (10.67)
	TIF180 (n=23)	5.78 (.88)	2.80 (1.39)	64.78 (17.22)	65.11 (13.70)
Bachelor academy	CTH/Course dept (n=69)	5.96 (.70)	3.70 (1.42)	66.45 (16.20)	77.81 (8.68)
	CTH/Other dept (n=8)	5.50 (.76)	1.94 (.62)	55.00 (9.91)	70.16 (7.08)
	Sweden, not CTH (n=6)	6.33 (.61)	5.17 (1.21)	67.50 (15.33)	77.08 (5.57)
	Europe, not Sw. (n=24)	5.50 (1.00)	3.65 (1.40)	67.19 (20.79)	71.20 (11.41)
	Outside Europe (n=13)	6.00 (.87)	3.31 (1.65)	60.00 (13.88)	57.31 (15.89)
Sex	Female (n=35)	5.81 (.93)	3.60 (1.35)	67.64 (19.66)	74.21 (8.87)
	Male (n=85)	5.88 (.75)	3.60 (1.55)	64.18 (15.41)	73.51 (12.88)

Figure 1 – Descriptives (standard deviation in parenthesis)

Figure 1 reports the descriptives of the study results. The EGM varies to a much larger extent than does the IGM. Interestingly, the extrinsic motivation was highest by those students who received their Bachelor degree at another Swedish university than Chalmers, and was lowest by those students who received their Bachelors at another department at Chalmers. The test performance was lower and varied more for the declarative test than for the analytical test (the former constituted 20%, and the latter 40% of the overall course grade).

Lin, McKeachie and Kim (2003) postulated that of the students of the highest third IGM, performance would be better for the students of the mid third EGM than would the bottom or top third. The results of this study support this for the analytical test only (the means for the low, medium and top thirds of EGM are 71.67, 77.58, and 73.97). The results do not support the postulate regarding the declarative test (where the means for the low, medium and top thirds of EGM are 60.00, 66.17, and 71.07).

The results of this study has implications for university admission, as it indicates that students who are top-performers of declarative-style exams may not necessarily be the best fit for educations aiming for understanding.

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