THINKING OUT OF THE BOX? WHAT TEACHERS MUST DO TO FOSTER HIGHER ORDER THINKING SKILLS IN ACCOUNTING GRADUATES

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ABSTRACT

This paper addresses the concern that accounting education is inadequate in equipping accounting graduates for the challenges of today's workforce. The study posits that students need to be taught higher-order thinking skills and to engage in deep learning in order to succeed in today's workplace. The underlying belief is deep learning is hard work and unless students are taught critical thinking skills, they cannot initiate deep learning, let alone sustain the effort.

The sample consisted of 687 tertiary accounting students in Malaysia. An abridged 35-item. Motivated Strategies for Learning questionnaire (Pintrich, Smith, Garcia & McKeachie, 1991) and a modified Internal-External (I-E) Locus of Control questionnaire (Rotter, 1966) were used to test for components of good thinking (i.e. metacognition, self-efficacy, intrinsic values and internalness[internal locus of control]). The Study Process Questionnaire (Biggs, 1987a) was used to measure deep learning behaviours. Correlational and stepwise regression analyses were used to test the relationships among good thinking variables and their effect on deep learning.

The results indicate that higher order thinking variables are significantly and positively related. Thinking is a significant predictor of deep learning and metacognition is the most significant predictor for deep learning behaviours. Hence, to equip students for outstanding work performance and social interactions, accounting teachers must cultivate in students good thinking skills by teaching them to first think about thinking. Teachers have to abandon conventional teaching strategies and create a learning space where students, not rules and procedures, take centre stage.

KEYWORDS:

Higher order thinking, deep learning, metacognition, intrinsic values, locus of control, self-efficacy

INTRODUCTION

This paper addresses the call for changes in accounting education over the past decade and the corresponding competencies required in the accounting profession today. Accounting education has been criticised for being too structured, excessively procedural-based and overly focused on instructional learning (Albrecht & Sack, 2000). While it may be effective in honing technical expertise, it is deficient in developing students' emotional competencies much needed by the profession.

Instructional learning, the predominant method of teaching in accounting education, tells students what to believe and what to do. While information is transmitted, there is no way of knowing whether students have accepted or rejected it. This was the reason that the profession made practitioners responsible for teaching accounting graduates students intellectual and procedural skills on-the-job to build their confidence and improve their communication skills.

FOSTERING HIGHER ORDER THINKING SKILLS AND INCULCATING DEEP LEARNING

The study asserts that the key to hone students' intellectual and emotional competencies is to foster higher order thinking skills and that promote deep learning. Higher order thinking skills enable students to analyse, criticise and advocate ideas, reason inductively and make inferences from unambiguous statements of knowledge or beliefs (Paul, 1984). It not only cultivates thoughtfulness and develops good attitudes, values and beliefs, but also promotes deep learning.

HIGHER ORDER THINKING AND DEEP LEARNING

The study will adopt Nickerson's (1988) dimensions of thinking (see Figure 1). Aspects of higher order thinking examined in this study are metacognition, values and beliefs.

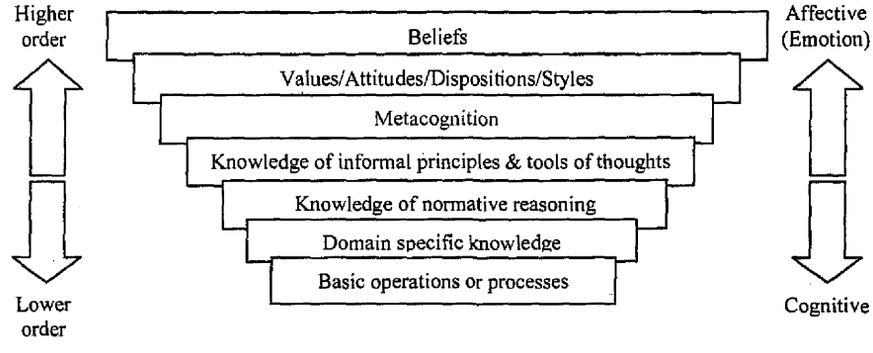

Figure 1. Nickerson's (1988) dimensions of thinking

RESEARCH METHODOLOGY

The sample consisted of 687 tertiary accounting students in Malaysia. An abridged 35-items Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia & McKeachie 1991) and a modified I-E Locus of Control (Rotter, 1966) questionnaire were used to test higher order thinking. The Study Process Questionnaire (Biggs, 1987b) was used to measure

deep learning. Correlational and stepwise regression analyses were used to test the relationships among good thinking variables, and their effect on deep learning behaviours. Hypothesis H1 was formulated to determine whether the good thinking sub-scales were positively and significantly related and tested using correlation analysis. Hypotheses H2 was used to determine the predictive abilities of the higher order thinking variables for deep learning and analysed using multiple regression.

RESULTS

Box plots of the four independent variables revealed no significant outliers. Frequency histograms and statistics for skewness and kurtosis showed that all these variables were reasonably normal, and their scatter plots showed significant linear relationships. Table 1 provides the descriptive statistics for both independent and dependent control variables. All variables exhibit acceptable skewness, kurtosis and reliability.

Table 1
Descriptive statistics and reliability coefficients for all variables

Variables	N	Mean	S.E.	Skewness	S.E.	Kurtosis	S.E.	Cronbach's alpha
Metacognition	645	4.38	0.03	0.88	0.07	0.10	-0.28	0.8080
Self-efficacy	636	4.42	0.04	0.90	0.09	0.10	-0.31	0.7710
Intrinsic Value	642	4.66	0.04	0.93	-0.08	0.10	-0.29	0.7393
Deep Learning	637	3.44	0.02	0.50	0.00	0.10	-0.25	0.7497
Internalness	643	13.63	0.10	2.64	-0.05	0.10	-0.37	0.8410

The correlation matrix in Table 2 shows that the components of good thinking (i.e. metacognition, self-efficacy, intrinsic values and internalness) are significantly and positively related. The relationships among good thinking variables are significant at the 0.01 level. Metacognition is significantly and positively correlated with self-efficacy, intrinsic values and internalness (i.e. higher metacognition is associated with higher self-efficacy, intrinsic values and internalness).

Table 2
Pearson correlation matrix for hypothesis H1

	Metacognition	Self-efficacy	Intrinsic values	Internalness
Metacognition	1.000	0.673**	0.640**	0.172**
Self-efficacy	0.673**	1.000	0.620**	0.246**
Intrinsic value	0.640**	0.620**	1.000	0.155**
Internalness	0.172**	0.246**	0.155**	1.000

**Correlation is significant at the 0.01 level (2-tailed)

The standard regression analysis was used to determine the predictability of independent variables (metacognition, self-efficacy, intrinsic value and internalness) and dependent variables of deep learning. The results are provided in Table 3. The R^2 of 0.390 indicates that the regression explains 39.0% of the variance in deep learning behaviour. The results suggest that when the four components of good thinking are regressed, only metacognition and

intrinsic values are significant predictors of deep learning behaviour at a 99% confidence level.

Table 3
Regression analysis for hypothesis H2

	Unstandardised Coefficients		Standardised Coefficients		
	B	**Std. Error**	**Beta**	t	Sig.
(Constant)	1.663	0.112		14.835	0.000
Metacognition	0.274	0.026	0.470	10.348	0.000
Intrinsic Values	0.076	0.024	0.141	3.205	0.001
Self Efficacy	0.040	0.026	0.072	1.562	0.119
Internalness	0.003	0.006	0.016	0.473	0.636

Note: R^2, Adjusted R^2, F and p value are 0.390, 0.386, 96.273 and 0.000 respectively

The results of stepwise regression show that metacognition accounts for 37% of the 39% of variance explained. From the R^2 change statistics and the significant F change, self-efficacy, intrinsic values and internalness do not make significant contributions to the total variance explained. The data also shows that metacognition and intrinsic values are significant predictors, with metacognition contributing to the most variance.

CONCLUSION, DISCUSSION AND IMPLICATION

The study posits that high achievers for the accounting profession entails teachers to foster higher order thinking skills that promote deep learning. The results provided some empirical evidence that good thinking promotes deep learning. Among the four thinking variables, metacognition is the most significant factor in improving deep learning behaviour. Hence, to equip accounting students with the self-regulatory skills necessary for outstanding work performance and social interactions, accounting teachers must cultivate in students good thinking by first teaching them to think about thinking. The implication is that, accounting teachers must abandon conventional teaching strategies, think out of the box and create a learning space (Budd & Rothstein, 2001) where students take centre stage. Only when that happens, sustainable changes in students' behaviours and beliefs are more likely to take place.

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