

Depicting the Post-Graduation Engineering Students Approaches to Learning in the Coimbatore City

Dr. B. Sripirabaa, Ms. Y. Benazir

Abstract— Learning is considered one of the most important mental functions of humans, animals and artificial cognitive systems. Learning is considered as the acquisition of new behavior which the people acquire frequently. Students learn in many ways, and teachers differ in instructional methods. Nevertheless, both students and teachers share the same goal to reach optimal learning. Educational programs and courses that are responsive to diverse student populations and their individual differences are essential. The aim of the study is to identify the learning approaches adopted by engineering students. The study is descriptive in nature and adopted survey strategy. Data was collected using a questionnaire from the final year post graduate female engineering students in Coimbatore city. The collected data was analyzed using percentage analysis, descriptive statistics and Correlation analysis

Index Terms— Learning approach, Acquisition of new behaviour, optimal learning

I. INTRODUCTION

Learning is considered one of the most important mental functions of humans, animals and artificial cognitive systems. It relies on the acquisition of different types of knowledge supported by perceived information. It leads to the development of new capacities, skills, values, understanding, and preferences. Learning functions can be performed by different brain learning processes, which depend on the mental capacities to understand the subject, the type of knowledge which has to be acquired, as well as on socio-cognitive and environmental circumstances. Sanford (1986) defines learning as the most acceptable view is relatively enduring change in behavior brought about as a consequence of experience. Learning is considered as the acquisition of new behavior which the people acquire frequently. A simple example is that people learn that ‘fire burns the body’ is learned from others and not necessarily by touching the fire. It seems that most students will learn the forms of knowledge and develop the cognitive abilities that they are asked to demonstrate; that is, students “prepare for what they

expect to be the performance requirements” (Fransson 1977:P. 245).A major concern is the continuing increase in the voluminous that students, are required to learn. This has led to an acceptance that it is important to consider not only what students are required to learn, but how they learn, and the implications of this for continued professional development. At the time of entry, graduates cannot be expected to have the range of knowledge and skills of experienced professionals. To attain and maintain the status of professionals he/she requires continual learning. Graduates will learn how to become successful professionals if they adopt the life-long learning concept, and thereby continually adapt to changes in the business environment. Therefore, education should lay the base on which lifelong learning can be built, in other words graduates should be taught how to learn. Students learn in many ways, and teachers differ in instructional methods. Nevertheless, both students and teachers share the same goal to reach optimal learning. Educational programs and courses that are responsive to diverse student populations and their individual differences are essential. Parents are keen in seeing their children enrolling and graduating from the prestigious educational institutions that are competing with each other to offer their best educational programmes and be at the forefront of academic excellence. In order to prove excellence, there is a tendency to focus only on the people who excel and what make them excel. Studies has been undertaken to understand how various aspects of student attitudes towards learning and their behavior relate to each other with learning outcomes, and also on how these relationships differ according to the disciplines. Research reveals that learning is more likely to be effective where a student plays a practical role in the learning process – for example drawing on strong motivation and clear goals to select an appropriate learning strategy and that process is described as “self-regulated” learning. It is difficult to directly assess the students learning in practice. However, research has also identified some measurable characteristics of students that are associated with the tendency to regulate one’s own learning with better performance. The characteristics identified are confidence in their own learning abilities (self-related beliefs), the motivation and the tendency to adopt certain learning strategies. Approaches to learning are the strategies which learners adopt in order

Manuscript received April 11, 2017

Dr. B. Sripirabaa, Associate Professor, GRG School of Management Studies, PSGR Krishnammal College for Women, Peelamedu, Coimbatore

Ms. Y. Benazir, Assistant Professor, Department of Business Management, PSGR Krishnammal College for Women, Peelamedu, Coimbatore

to succeed in learning. The term “approach” is used to signify both the learner’s intention and the way in which she/he processes information (Garrison et al., 1995). Cilliers and Sternberg (2001) defines learning approaches as the processes of acquiring knowledge and skills by means of studying, instructing and experience, prior to the learning outcome. Over the last few decades, education researchers utilized qualitative methods to assess students’ experience of learning and their individual approaches to tackle the tasks of their study course (Duff, 2003). How students study, rather than what they study, is an area that is increasingly attracting the attention of education researchers. “It is clear that a learning style as body of knowledge has been accepted into the education literature and professional development agenda since the 1980s. Studies identified three basic approaches to learning that may be adopted by students which contains 52 items and is generally referred to as the Revised ASI or RASI (Richardson, 2005) that is Deep, Surface and Strategic approaches. Surface Approach-The student’s motive to learn is to only carry out the task because of external positive or negative consequences. They memorize what is most important. Because of this focus, they do not see interconnections between the meanings and implications of what is learned. Deep Approach- The deep motive is based on internal motivation or curiosity. In the deep approach, there is a personal commitment to learning, searching for analogies, relating to previous knowledge, and theorizing about what is learned. Achieving Approach-The achieving motive is like the surface approach in that it is focused on the product (getting an “A” or winning an award). The strategy is to maximize the chances of obtaining high marks. If educators find ways for improving educational experiences of their students, they must understand how their students learn and the effects of the learning environment on their learning approaches.

II. REVIEW OF LITERATURE

It discusses the concepts related to the study through reviews of literature which explains the Approaches to learning among the students.

Thomas et al (2005) argues that the concept of deep learning is not new to higher education. The main purpose of this study is to examine the factor structure underlying the items on National Survey of Student Engagement identifies deep approaches to learning. Two different samples are used for the study. The first, from the 2004 administration of NSSE, consists of 110,886 randomly selected first-year and senior students from 450 U.S. four- year colleges and universities. The second, from the 2005 administration of NSSE, consists of 41,966 first-year students and seniors from 519 U.S. four-year colleges and

universities. The 41,966 students randomly selected from the total of 209,834 respondents which is one-fifth of the randomly selected respondents. Using NSSE data that can create deep approaches to learning scale, which is a combination of the three “sub”-scales. Using exploratory and confirmatory factor analysis, the structure and characteristics of items about student uses of deep approaches to learning is examined. Institutions and researchers can use the resulting scales to assess and investigate deep approaches to learning. It suggests that the deep approaches to learning scale and its sub-scales have adequate consistency with the second-comparison between NSSE deep learning items and other measures of deep learning suggests that there is sufficient substantive overlap.

Michael et al (2012) examines the role that students’ discipline-related self concepts with deep and surface approaches to learning, their overall learning outcomes, and continuous engagement in the discipline itself. Fourteen male and 28 female students enrolled in both first and second-semester first-year psychology at the Australian National University voluntarily participated in the study. The average age is 21.26 years. Thirty-six (85.7 %) participants indicate that English is their first language. Using a cross-lagged panel design of first-year university psychology students Semester 1 deep approach to learning positively predicts that their Semester 2 psychology-student social identification; this relationship is mediated by students’ actual Semester 1 learning. Relatively high levels of Semester 2 psychology-student social identification lead to a desire for further engagement in the discipline through an enhanced intent to continue their psychology studies. Discipline-related self- concept is not observed to act as a precursor to learning approaches. It provides a clear evidence not only for the validity of the deep learning approach construct, but for the theoretical claims associating a deep learning approach with an impact on self-concept, and the educational value of encouraging a deep learning approach both for short-term academic performance and for continuing motivation to engage in the discipline. Students’ participation is not anonymous, as it matches with their responses to the measures of social identification, and deep and surface learning approaches, to their course marks. The study shows that a deep learning approach, influences subsequent discipline-related self-concept and that mediates by actual discipline learning.

Petra et al (2009) studies the changes in learning approaches that effects the personal values of college students. Uses the study data from different age groups and analyzes the effects of just two or three factors using single level analytical techniques. The study employs multilevel modeling as a more appropriate technique for the analysis of longitudinal data to examine the factors influencing changes in the learning approaches of 153 international undergraduate students

over a period of three years. Learning approaches focuses on gender, discipline area of study, prior performance, personal values and the experiences of students who undertake higher education in another country. Using hierarchical linear modeling (HLM) the study identifies the effects of personal values on learning approaches and changes in them over a time. The findings show no changes with students in the deep and surface approaches to learning but a significant decline in the achieving approach, particularly for students whose previous experiences are more of a formal teaching. Students' personal values in terms of security, achievement and hedonism affect the achieving approach while there are no effects on the personal values of tradition, conformity, universalism, self-direction and stimulation the study also observes that there are no significant effects for gender, discipline and ability.

António M. Duarte (2006) attempts to characterize Portuguese students' conceptions of learning and approaches to learning. To assess the conceptions of learning and approaches to learning, a sample group of 252 Geography students is chosen as the respondents. (54% female and 46% male). Factorial analysis is used with 12 factors that extracts (after Varimax rotation and according to Kaiser's criterion) with eigen values higher than one and accounting for 61.1% of the variance. Alpha Cronbach calculation for each factor set of items (items with correlations higher than 0.50) and correlation of each item with the total of its group (all higher or equal to 0.17) it is possible to select nine scales with alphas higher or equal to 0.60. Surface approach scale negatively correlates with deep approach scale ($r = -0.35$; $p \leq 0.001$) and in a reduced and non-significant way with achieving approach scale. The study implies a scale that measures concerns with academic assessment is reflecting a "positive stress" towards evaluation situations. The results show a representation of learning as the understanding of knowledge and application in the real world.

Marlies et al (2010) outlines the factors that encourages and discourages in adopting deep approach to learning in student-centered learning environments. Teachers play a role; if they are involved and oriented towards students and changing their conceptions, students are inclined to use a deep approach. Concerning the student factors, older students and students whose personality is characterized by openness to experience, extraversion, conscientiousness, agreeableness and emotional stability use a deeper approach. It shows that students in different disciplines differ in the approach to learning they adopt, with students in human sciences in general showing the deepest approach. With regard to perceived contextual factors, findings indicate that students who are satisfied with the course quality (e.g. appropriateness of workload/assessment, teaching, and

clarity of goals) employ a deep approach. If students are intrinsically motivated, feel self-confident and self-efficacy and prefer teaching methods that support learning and understanding, a deep approach will be more frequently adopted. The overview of the research shows the process of stimulating students towards the use of deep approaches to learning in student-centred learning environments. This could serve as a basis for new studies to fill in the gaps in knowledge about approaches to learning.

Nuray Senemoglu (2011) identifies students' approaches to learning and study skill as a significant factor affecting the quality of learning. If teacher educators are to find ways for improving educational experiences of their students, they must understand how their students learn and the effects of the learning environment on their learning approaches. The study examines the Turkish and American college of education students' with their major, school year, and gender. The Approaches and Study Skills Inventory for Students (ASSIST) is used to investigate Turkish students' learning approach and study skills. One Way Analyses of Variance (ANOVA) is performed on the data obtained from the students of each country separately. Mean scores, standard deviations of approaches to learning and study skills, and number of students from each country is found. The analysis of ANOVA for Turkish and American students reveals statistically significant differences between their approaches to learning— deep, strategic, and surface. Scheffe post-hoc tests reveals that mean scores of Turkish students using deep approach is significantly higher than those of strategic and surface approaches, and strategic approach than those of surface approach. American students preferred deep and strategic approaches significantly higher than surface approach. But there is no significant difference between strategic and deep approaches. To investigate country differences in students' approaches to learning (deep, strategic and surface), a one-way between groups multivariate analysis of variance (MANOVA) is used and it shows that there is statistically significant difference between countries on the combined dependent variables. The mean scores indicates that Turkish students reports slightly higher level of deep approach than American Students. The Turkish students prefer slightly higher level of all three approaches- deep, strategic, and surface- than American students. The results of the study indicate that to enhance quality of learning outcomes of teacher candidates with deep learning approach consistently. The need to evaluate and redesign indicates that pre-service teacher training program, teaching learning environment, and assessment procedures should be evaluated and redesigned.

Necla Ekinci(2009) identifies the preferences of learning approaches (deep, surface, strategic) of

undergraduate students and reveals the relationships between their preferences and some variables of teaching-learning processes. This is a descriptive study and the population consists of the students of undergraduate programs of Hacettepe University, Mersin University and Süleyman Demirel University. The sample used is 3428 of first and fourth grade undergraduate students from various programs in the subject fields of health sciences, science, social sciences and fine arts mutually existing in the three universities. The data of the study is collected through the administration of the two inventories, namely Learning Approach Inventory and Teaching-Learning Environment Perception Inventory. The basic finding outlines that although undergraduate students have a higher tendency of applying deep learning approach in handling a learning topic, they also apply surface and strategic learning approaches. Subject fields (health sciences, science, social sciences and fine arts) affect learning approach preferences of the students. While students of fine arts have the highest deep learning scores, students of health sciences have the lowest deep learning scores, There is a significant positive relationship between the academic achievement and scores of deep and strategic learning preferences of the students and a significant negative relationship exists between academic achievement and scores of surface learning preferences, Perceptions of the students on teaching-learning environment as leading students to deep learning are below the average score. The higher the perception of the students on teaching-learning environment, the higher deep and strategic learning preferences. The higher the negative perception of the students on teaching-learning environment, the higher the liability of preferring surface learning approach. Thus, the undergraduate students have a higher tendency of applying deep learning approach in handling a learning topic, but they also apply surface and strategic learning approaches considerably and do not find the quality of teaching learning environment high enough as leading students to apply deep learning approach.

Karen Scouler (2006) assessed the influence of assessment method on students' learning approaches, Multiple choice question examination versus assignment essay with the sample of 206 out of which 133 students (69.3%) females, 59 students (30.7%) males second-year The questionnaire requires a simultaneous response for each assessment method to statements focusing on their learning approaches, their perceptions of the levels of intellectual abilities is being assessed, and their preference for either the assignment essay or MCQ examination as an assessment method of the course and the reasons for their choices. The findings is that these second-year students are significantly more likely to employ surface learning approaches (surface strategies and surface motives)

when preparing for their MCQ examination and deep learning approaches (deep strategies and deep motives) when preparing their assignment essays. There are high significant differences in students' perceptions of the levels of intellectual abilities being assessed by the two assessment methods. The MCQ examination is perceived as assessing knowledge-based or lower levels of cognitive processing and the assignment essay is perceived as assessing higher levels of intellectual skills and abilities such as analysis, application and comprehension. A complex and interesting pattern of relationship is found between perception, learning approach and performance outcome. At least in the assignment essay context, students' perceptions of what is being assessed interacted systematically with their selection of learning approaches when preparing their essays these relationships is associated with differential learning outcomes. The variables are analysed in relation to each other and to perform outcome in both assessment tasks. Results indicate that students are more likely to employ surface learning approaches in the MCQ examination context and to perceive MCQ examinations as assessing knowledge-based (lower levels of) intellectual processing. Poorer performance in the MCQ examination is associated with the employment of deep learning strategies. Poorer performance in the assignment essays is associated with the employment of surface strategies. Students are more likely to employ deep learning approaches when preparing their assignment essays which they perceive as assessing higher levels of cognitive processing.

Hanan et al (2011) aims to investigate students' perceptions of assessment and the resulting learning styles. Qualitative semi-structured interviews are conducted with 14 students and 8 clinical supervisors from Sydney Medical School, 12 students and 13 clinical supervisors from King Saud bin Abdulaziz University. Both institutions have similar curricula but a different assessment approach. The interviews are transcribed and analyzed using thematic analysis. Interview transcripts are stored and analyzed using ATLAS.ti. Three themes emerged from analyses of the interviews: the function of assessment, learning outcomes and authentic assessment in the clinical environment. Cultural differences and emotions affect students' perceptions of assessment and learning styles. Further a combination of formative and summative assessment based on learning objectives is required. This combination should take into consideration students' cultural background, values and the implemented education system. This balance should be sufficient to motivate students in order to maintain their focus and attention, and reduce the potential negative impacts of a hidden curriculum. The experience of authentic assessment is a powerful motivator for students' approaches to learning.

Dominic et al (2010) investigates the weekly online assessment as a teaching and learning method. The sample taken for the study is 140 undergraduate sport science students. The survey is about their attitudes towards learning before and after completing seven summative weekly online assessments. One-way ANOVA with post-hoc paired samples *t*-tests and a Bonferroni corrected alpha level of 0.0023 to indicate statistical significance. The paired samples *t*-test found the 7-week average online assessment scores to be higher than the year coursework average for all other modules indicates the differences between the seven online assessment scores. Spearman rank correlation tests found no relationship between the online assessment week and online assessment score. The students indicate, studying more frequently between lectures and reading more selectively, but no relationship with assessment performance is found. Weekly online assessment is partially supported as a useful method for engaging students in learning activities.

Lorraine et al (2010) explores the differences in approaches to learning between undergraduate and postgraduate cohorts with longitudinal data with previous cross-sectional data. Vermunt's Inventory of Learning Styles is used to measure students' approaches to learning. 120-item instrument comprises 4 scales: meaning directed, undirected, and reproduction-directed approaches to learning displays the same pattern. However, application-directed scores increase significantly in the second half of the undergraduate degree program. Descriptive statistics of baseline data regarding degree program, age, and gender are considered. The Shapiro-Wilk test determines that the variables are normally distributed, and Levene's test for homogeneity of variance identifies that there is no heteroscedasticity. Analysis of variance is conducted within learning styles across for both undergraduate and postgraduate students. Greenhouse-Geisser and Huyn-Feldt epsilon above 0.95 is obtained for all variables. Bonferroni corrected pair wise a comparison is conducted where main effects are significant. Commencing postgraduate students' approaches to learning is similar to finishing undergraduate students, and this group is significantly more oriented towards meaning-directed learning compare to undergraduate students. Thus, Pharmacy students' maturation in approach to learning is evident and this bodes well for pharmacists' engaging in life-long learning and capacity to work in increasingly complex health settings.

Baeten et al (2008) focuses on the relationships between experiences with portfolio assessment, students' approaches to learning and their assessment preferences by means of a pre- and post-test design in an authentic class setting. The respondents are 138 first-year professional bachelor's degree students in

office management. They are assessed by means of portfolio assessment in a course that combines constructivist design principles and lectures. Approaches to learning and assessment preferences are measured by means of the Revised Two-Factor Study Process Questionnaire and the Assessment Preferences Inventory. During the pre-test, both deep and surface approaches to learning are behind the average of 3. A majority of the students (54.3%) did not have a pronounced approach to learning because they score low on both approaches. Result shows that student preferences for participation in examination and for permanent evaluation decreased significantly. Surface learning increases significantly. The surface approach proved to be a significant negative predictor of the portfolio assessment score.

Zhi-Hong Chen (2013) identifies that the Competitive learning is an attracting ever increasing amount of attention in the field of digital game-based learning. Different mechanisms for the promotion of competitive learning, including social-competition and self-competition mechanisms, few addresses student preferences as to the choice between social-competition and self-competition, especially considering students' different levels of capabilities and their perception. Thus, this study investigates how students with different levels of capabilities choose and perceive learning models between social-competition and self-competition. It is carried out using the mixed-model experimental design. Sample consisted of 54 elementary school students assigned into three ability-level groups with all groups experiencing both treatments of social and self competition digital game-based learning environments. The results indicate that low-ability students have lower test anxiety and greater preference for social-competition, whereas medium-ability and high-ability students show higher test anxiety and a similar preference for social-competition and self-competition. Competitive learning design framework should consider enjoyment aspect of social competition for low ability students, and interactive and Performance aspects for self- and social-competition for medium- and high ability students.

III. OBJECTIVES OF THE STUDY

To identify the learning approaches adopted by Engineering students

IV. METHODOLOGY

The research purpose and research questions revealed that this study is descriptive in nature and the study adopted survey strategy. Data was collected using a standard questionnaire. Each response was measured using a three-point Likert scales, ranging from 3 agree to 1 disagree. The sample size is 150 comprising of Post

graduate students from the Engineering disciplines. Data was collected during the period November and December 2016. The study used percentage analysis to profile the respondents, Correlation analysis is used to identify the association between the learning approach variables. The primary data used by the study were directly obtained from the questionnaire. There are three common approaches to learning which contains 52 items generally referred to as Revised Approaches to Students Inventory (Richardson, 2005). They are, namely, Deep, Strategic and Surface approaches to learning. The average of the items in each factor was computed and was used for analysis.

V. ANALYSIS AND DISCUSSION

Demographic profile of the respondents on the study variables

To map the demographic profile of the respondents’ descriptive statistics is presented as frequency and percentage. The demographic factors included in the research are age, post graduation and Location of Residence. It is inferred that 3% of the respondents are in the age group of 24 & 25 years. 65% of the respondents are in the age group of 22 years; the respondents taken for the study were the engineering post graduation female students. 31.3% of the respondents are residing in the rural areas, 52.7% are from urban areas and 16% are from semi-urban areas. This portrays the diverse profile of the respondents which is essential for the study, since the study focuses in depicting the approaches to learning among Female Post graduate Engineering students.

Descriptive Statistics

The Descriptive procedure displays univariate summary statistics for the factors and calculates standardized values (z scores).

Table 1: Descriptive Statistics

Factors	N	Mean	Std. Deviation
Deep Learning	150	2.9457	0.56829
Strategic Learning	150	3.0842	0.58733
Surface Learning	150	3.0196	0.62370

All the variables are measured on a scale of 1 to 5 (1 – Strongly Disagree to 5 – Strongly Agree) indicating that the respondents adopt strategic and surface approaches to learning.

The mean value for the variable strategic learning is higher (M=3.0842&SD=0.58733). The mean value for the variable surface learning is the second highest value (M=3.0196&SD=0.62370). The mean value for the variable deep learning is the second highest value

(M=2.9457&SD=0.56829). It implies that the respondents have the intention to understand what they were studying and they want to achieve good grades to maximize the chances for academic success.

Table 2: Correlation analysis- Learning Approaches of Post graduate Engineering Students

Approaches to Learning		Deep learning	Surface Learning
Strategic Learning	Pearson Correlation	0.758**	0.784**
	Sig. (2-tailed)	0.000	0.000
Deep learning	Pearson Correlation	1	0.657**
	Sig. (2-tailed)		.000

Correlation analysis was carried out to find the association/relationship between the variables. The learning approach dimensions considered in correlation analysis and among the variable surface learning is highly correlated with strategic learning (r=0.784; p<0.000) and the correlation is significant. Strategic learning is highly correlated with deep learning (r=0.758; p<0.000) and the correlation is significant. Deep learning is highly correlated with surface learning (r=0.657; p<0.000) and the correlation is significant. This proposes that the more the students use Surface Approach in their studies, the lower their academic achievement. It is found that high scores on the surface approach that was related to low marks in the final exam. Deep approach to learning did not result in higher grades on the evaluation even though this approach was related to high quality learning outcomes.

CONCLUSION

In conclusion, the results of this study suggest that both the quality of student learning and students’ pursuit of higher grades are enhanced by the careful selection of an assessment method that encourages students’ development of higher order intellectual skills and the employment of deeper learning approaches; and allows students to demonstrate their development. They further suggest the important role played by students’ perceptions of the abilities and skills being assessed and the relationship between these perceptions and their selection of learning approaches. Students have a higher tendency of applying surface learning approach in handling a learning topic, but they also apply deep and strategic learning approaches considerably and do not find the quality of teaching learning environment high enough as leading students to apply deep learning approach. Students who utilize deep approach in their studies aim to understand the meaning in the materials

they were learning. Teachers need to discourage the use of surface approach and design course that require the students to think critically, seek meaning, to understand their studies material and to be able to relate ideas with prior knowledge or their own experiences. Accordingly, educators must provide a learning environment where students develop a strong personal interest. This is because Warburton (2003) argues that a first step in reaching a deep learning is a high level of student commitment with the learning subject so that students are motivated to understand. Thus, by promoting or inducing deep approach to learning, it is hope that surface approach to learning can be reduced.

REFERENCE

1. Measuring Deep Approaches To Learning Using The National Survey Of Student Engagement, Paper Presented At The Annual Meeting Of The Association For Institutional Research, May 14 – May 18, 2005, Thomas F. Nelson Laird, Rick Shoup & George D. Kuh (2005).
2. On The Role Of Discipline-Related Self-Concept In Deep And Surface Approaches To Learning Among University Students- Received: 16 November 2010 / Accepted: 10 April 2012 / Published Online: 22 April 2012_ Springer Science Business Media B.V. 2012 Instr Sci (2013) 41:271–285 DOI 10.1007/S11251-012-9227-4, Michael J. Platow, Kenneth I. Mavor & Diana M. Grace (2012).
3. The Effects Of College Students' Personal Values On Changes In Learning Approaches, Received: 8 August 2009 / Published Online: 17 September 2009_ Springer Science Business Media, LLC 2009, Res High Educ (2010) 51:65–87, DOI 10.1007/11162-009-9147-6, Petra Lietz ,Bobbie Matthews (2009).
4. Conceptions Of Learning And Approaches To Learning In Portuguese Students, Received: 27 July 2005 / Accepted: 6 June 2006 / Published Online: 9 July 2006, Springer Science Business Media B.V. 2006, High Educ (2007) 54:781–794, DOI 10.1007/S10734-006-9023-7, ORIGINAL PAPER, Anto' Nio M. Duarte (2006).
5. Using Student-Centred Learning Environments To Stimulate Deep Approaches To Learning: Factors Encouraging Or Discouraging Their Effectiveness, Received 8 February 2010, Received In Revised Form 10 June 2010, Accepted 14 June 2010, Marlies Baeten, Eva Kyndt, Katrien Struyven, Filip Dochy (2010).
6. Education And Science, Vol. 36, No 160, College Of Education Students' Approaches To Learning And Study Skills, Nuray Senemoglu (2011).
7. Learning Approaches Of University Students, , Education And Science, Vol. 34, No 151, Necla EKINCI (2009).
8. Kluwer Academic Publishers. Printed In The Netherlands. Higher Education 35: 453–472, 1998. 453, The Influence Of Assessment Method On Students' Learning Approaches: Multiple Choice Question Examination Versus Assignment Essay, Learning Assistance Centre, Level 7 Education Bldg A 35, University Of Sydney, Broadway, NSW 2006, Australia. E-Mail: Kscoull@Extro.Ucc.Su.Oz.Au, KAREN SCOLLER (1998).
9. Pharmacy Students' Approaches To Learning In Undergraduate And Graduate Entry Programs, American Journal Of Pharmaceutical Education 2010; 74 (6) Article 106. Lorraine Smith, Phd, Ines Krass, Phd, Erica Sainsbury, Phd, And Grenville Rose, Phd, Submitted December 16, 2009; Accepted February 19, 2010; Published August 10, 2010.
10. International Journal Of Medical Education. 2:44–52, ISSN: 2042-6372, DOI: 10.5116/Ijme.4ddb.Fc11, Students' Perceptions Of The Impact Of Assessment On Approaches To Learning: A Comparison Between Two Medical Schools With Similar Curricula, Hanan M. Al Kadri, Mohamed S. Al-Moamary, Mohi E. Magzoub, Chris Roberts, Cees P.M. Van Der Vleuten (2011).
11. Vol. 9, No. 2. ISSN: 1473-8376, Changes In Approaches To Learning Among Undergraduate Sports Science Students Following A Programme Of Weekly Online Assessments, Dominic (2010).
12. Instr Sci (2008) 36:359–374, DOI 10.1007/S11251-008-9060-Y, Students' Approaches To Learning And Assessment Preferences In A Portfolio-Based Learning Environment, Marlies Baeten, Filip Dochy, Katrien Struyven, Published Online: 15 August 2008, Springer (2008).
13. Facilitating Learning Preferences And Motivation Of Different Ability Students For Social-Competition Or Self-Competition. *Educational Technology & Society*, 17(1), 283–293. Chen, Z.-H. (2014).
14. Learning Preferences And Motivation Of Different Ability Students For Social competition Or Self-Competition, Zhi-Hong Chen, Department Of Information Communication, Yuan Ze University, Taiwan // Zhchen@Saturn.Yzu.Edu.Tw, (Submitted February 5, 2013; Revised April 22, 2013; Accepted May 29, 2013)