Global Journal of human-social science: G
Linguistics & Education
Volume 16 Issue 5 Version 1.0 Year 2016
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-460X & Print ISSN: 0975-587X

Factors Affecting Information Technology Students' Motivation Case Study: Najran University, Saudi Arabia

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Fifty undergraduate students from a computer and information college participated in this research. The students completed Academic Intrinsic Motivation Questionnaire (MSLQ) questionnaires. In addition, instructors answered interview questions related to factors affecting their students' motivation.

Instructors who participated in seminars and interview believes the English language is the major barrier affecting motivation. In addition, instructors believes incentives and strict regulation may help improving students' motivation. Adding to incentives, the sense of completion is missing beside no enough recognition from college and instructors.

GJHSS-G Classification : FOR Code: 139999

FACTORSAFFECTINGINFORMATIONTECHNOLOGYSTUDENTSMOTIVATIONCASESTUDYNAJRANUNIVERSITYSAUDIARABIA

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Factors Affecting Information Technology Students' Motivation Case Study: Najran University, Saudi Arabia

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Abstract- The study of computer science and information systems requires commitment and dedication. Students must learn above and beyond the standard requirements in order to compete in the job market. Hence the motivation is the major driver to accomplish such requirements. This paper investigates the possible factors affecting students' motivation at Computer Science and Information System College in Najran University. To find the best ways to improve student performance, academic planning, and improve college performance in general was behind the reason for the authors to study the motivation factors.

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Instructors who participated in seminars and interview believes the English language is the major barrier affecting motivation. In addition, instructors believes incentives and strict regulation may help improving students' motivation. Adding to incentives, the sense of completion is missing beside no enough recognition from college and instructors.

The survey results shows students agreed that the Needs and Mastery factors motivate them. Whilst the students wasn't able to decide on Power, Fear, Authority, and Peers motivation factors. The paper provides recommendations for college leaders and instructors on best ways to improve students' motivation in order to reach better performance.

I. Introduction

This paper investigated the possible factors affecting students' motivation at Computer Science and Information System College in Najran University. It was very important to know which factors affecting them and if other known intrinsic and extrinsic factors affecting their motivation or not.

There are many reason drives the authors to study these factors such as find best ways to improve student performance, academic planning, and improve college performance in general. The survey conducted among students using MSLQ standard survey to better understand the intrinsic and extrinsic factors impacting students' performance. In addition, the researchers conducted interviews and seminars with instructors to better understand on which factors affecting students' motivation.

The college success essentially depends on intrinsic motivation factors. The motivations behind academic performance vary across many intrinsic and extrinsic factors (Needs, Mastery, Fears, Peers, Power, Authority).

The research objectives include: 1) Identifying factors which affecting the motivation of the CS and IS students; 2) Discussing the factors roles on positively or negatively impacting students' motivation; 3) Analyzing the interviews and surveys data conducted with faculty members and students; 4) Determining recommendations for instructors to address the motivation issues; 5) Producing guidelines for CS and IS college leaders to deal with motivation issues; and 6) Improving the quality of learning outcome for CS and IS.

II. Literature Review/Background

This study is unique in addressing specific college at Najran University (CS and IS). However, the study of students' motivations has rich of literature that could be useful for the study. Robert Harris (1991) believe that, there are 9 best ways to motivate students such as explain, reward, and care. However Harris doesn't have explanation on how to overcome background factor.

Incentives are important factor to enhance motivation as Beltz, Link, Ostermaier, (2012) explained in their book Incentives for Students: Evidence from Two Natural Experiments. In addition the authors explained their findings when students performs badly especially when their effort is rewarded belatedly. How can the academic achievements of students be improved? This is a concern shared by students, who strive for excellence in their education; universities, which aim to satisfy this demand; and society in general, as human capital is a driver of economic growth and wealth (Hanushek and Wößmann, 2011).

They are no longer an effective, let alone efficient means of improving student performance (Hanushek, 1996, 2003). Class size reduction is a case

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in point (Hoxby, 2000). Research interest has therefore turned to incentives for universities, faculties, and students. Incentives for students directly affect effort, which is an essential input in the production of education (Bishop and Wößmann, 2004).

Keller (1987) offers a very practical model of designing motivational instruction. This model is termed the ARCS model. The 4 components of the ARCS model acronym are: Attention, Relevance, Confidence, and Satisfaction. (Teaching & Learning Centre http://www.-ln.edu.hk/tlc/learning_matters/12-98-0298.pdf>)

a) Intrinsic motivation

"Intrinsic motivation refers to behavior that is driven by internal rewards. In other words, the motivation to engage in a behavior arises from within the individual because it is intrinsically rewarding. This contrasts with extrinsic motivation, which involves engaging in a behavior in order to earn external rewards or avoid punishments."

"Intrinsic motivation has been defined as (a) participation in an activity purely out of curiosity, that is, for a need to know about something; (b) the desire to engage in an activity purely for the sake of participating in and completing a task; and (c) the desire to contribute (Dev, 1997). Intrinsic motivation requires much persistence and effort put forth by an individual student. Students with intrinsic motivation would develop goals such as, the goal to learn and the goal to achieve. A mastery goal, the desire to gain understanding of a topic, has been found to correlate with effective learning strategies, positive attitudes toward school, the choice of difficult tasks as opposed to a simple task, perceived ability, effort, concern of future consequences, self- regulation, the use of deep cognitive processes, persistence, achievement, choice and initiative (Archer, 1994; Miller, Greene, Montalvo, Ravindran, & Nichols, 1996; Garcia & Pintrich, 1996)." To help students develop academic intrinsic motivation, it is important to define the factors that affect motivation (Dev, 1997).However, intrinsic motivation factors include: mastery goals and the need for achievement (Shia, 1998).

b) Extrinsic motivation

Refers to motives that are outside of and separate from the behaviors they cause;the motive for the behavior is not inherent in or essential to the behavior itself (Hoyenga & Hoyenga, 1984).

However, Hoyenga & Hoyenga, believe that adding an extrinsic incentive to study or complete a task has also been found to decrease intrinsic motivation. Extrinsic students prove one's competence while intrinsic students improve their competence (Schraw, Horn, Thorndike-Christ, & Bruning, 1995).

Extrinsic motivation has four factors which are:authority expectations (family and professor), peer acceptance, powermotivations, and fearoffailure (Shia, 1998).

i. *Power*

Power motivations are often seen in students, especially in a college setting. A student who is motivated by power feels the need to control his/her environment. The best way they find to do this is to prove their competence to others. Power motivations are difficult to spot in students because unlike other extrinsic motivations, they increase achievement measures (Hoyenga & Hoyenga, 1984).

Power motivation can be seen as an individual need that must be met in order to feel competent as a student. Fortier, Valler and, and Guay (1995), performed a study that confirmed perceived academic competence to be directly related to autonomous academic motivation, which is directly related to school performance. However when a block occurs in the process of reaching the goal, the intrinsic motivator will find a strategy to get around the block: the power motivator may feel frustrated and helpless (Hoyenga & Hoyenga, 1984).

ii. *Fear of failure*

Fear of failure motivation is inhibitory no matter which theory or example one uses to explain it. It brings about avoidant approaches to situations in order to avoid such fear. The motive to avoid failure is a general disposition to avoid failure or the capacity to react with shame and embarrassment when the outcome of an achievement task is failure.

The only way to avoid failure is to avoid achievement tasks. One can see that this avoidant behavior lacks intrinsic motivation (Shia, 1998). Research shows that fear of failure is noticed most when such students are given moderately difficult task to achieve (Hoyenga&Hoyenga, 1984).

Both of these factors (Power and Fear of failure) clearly inhibit the characteristics of intrinsic motivation. Not only do they inhibit positive behavior, but they may cause students to avoid academics altogether (Shia, 1998).

In addition, researchers increasingly are linking the motivational, cognitive, and social/environmental aspects of learning (Bandura, 1993; Boekaerts, 1997; Pintrich&Schunk, 1997; Pintrich& Garcia, 1991; Vander Stoep, Pintrich&Fagerlin, 1996; Zimmerman, 1995).

III. Method

a) Participants

Fifty undergraduate students from a computer and information college participated in this research. The students completed Academic Intrinsic Motivation Questionnaire (MSLQ) questionnaires. The completed questionnaire did not include the students name to ensure confidentiality. In addition, the researchers

conducted seminars with instructors to answer research questions.

b) Materials and Procedures

The proposed Academic Intrinsic Motivation Questionnaire (MSLQ) (Questionnaires appear in Appendix A). Responses were analyzed by performing are liability analysis (coefficient alpha) on the proposed inventory to check for unreliable items. The second set of analysis was achieved by performing descriptive analysis to identify factors affecting students' motivation. The hypothesis are as follows:

H1: At least one factor (Authority, Mastery, Power, fear, peer, Need) affecting students' motivation. (+ve Hypnosis)

H0: No factor (Authority, Mastery, Power, fear, peer, Need) affecting students' motivation. (-ve Hypnosis)

The research questions are as follows:

- Why students are not motivated enough
- What barriers affect students motivation
- How to motivate students

The first set of results were found by performing a reliability analysis on the entire inventory to test forreliability. The results obtained was a coefficient alpha score of .7748 (standardized reliability is .70).Reliability analysis is displayed in Appendix C. These results suggest that the test is a reliable test. In other words, if the inventory were to be filled out by the same individuals at a later time, then the results should besimilar.

The second set of results was conducted by SPSS for the following motivation's factors using 7-likert scale:

- Needs
- Power
- Authority
- Fears
- Master
- Peers

c) The result

i. Quantitative Results

The following statistical table represents the descriptive results using SPSS:

- *Needs Factor*

Table 1.1 : The Mean and STD of Needs

N	Valid	50
	Missing	0
Mean		4.6200
Std. Deviation		.96658

- *Factor*

Table 1.2 : The frequency of Needs factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.0	2.0	2.0
	Disagree Somewhat	6	12.0	12.0	14.0
	Undecided	12	24.0	24.0	38.0
	Agree Somewhat	23	46.0	46.0	84.0
	Agree	8	16.0	16.0	100.0
	Total	50	100.0	100.0	

- *Power Factor*

Table 2.1 : The Mean and STD of Power Factor

N	Valid	50
	Missing	0
Mean		4.1800
Std. Deviation		.80026

Table 2.2 : The frequency of Power factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Dsiagree Somewhat	11	22.0	22.0	22.0
	Undecided	20	40.0	40.0	62.0
	Agree Somewhat	18	36.0	36.0	98.0
	Agree	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

- *Authority Factor*

Table 3.1 : The Mean and STD of Authority Factor

N	Valid	50
	Missing	0
Mean		4.2600
Std. Deviation		1.04608

Table 3.2 : The frequency of Authority factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	2.0	2.0	2.0
	Disagree	1	2.0	2.0	4.0
	Disagree Somewhat	6	12.0	12.0	16.0
	Undecided	24	48.0	48.0	64.0
	Agree Somewhat	13	26.0	26.0	90.0
	Agree	4	8.0	8.0	98.0
	Strongly Agree	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

- *Fears Factor*

Table 4.1 : The Mean and STD of Authority Factor

N	Valid	50
	Missing	0
Mean		**4.1600**
Std. Deviation		.95533

Table 4.2 : The frequency of Authority factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.0	4.0	4.0
	Disagree Somewhat	10	20.0	20.0	24.0
	Undecided	19	38.0	38.0	62.0
	Agree Somewhat	16	32.0	32.0	94.0
	Agree	3	6.0	6.0	100.0
	Total	50	100.0	100.0	

- *Mastery Factor*

Table 5.1 : The Mean and STD of Mastery Factor

N	Valid	50
	Missing	0
Mean		**4.6200**
Std. Deviation		1.12286

Table 5.2 : The frequency of Mastery factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.0	4.0	4.0
	Disagree Somewhat	7	14.0	14.0	18.0
	Undecided	11	22.0	22.0	40.0
	Agree Somewhat	18	36.0	36.0	76.0
	Agree	12	24.0	24.0	100.0
	Total	50	100.0	100.0	

- *Peers Factor*

Table 6.1 : The Mean and STD of Peers Factor

N	Valid	50
	Missing	0
Mean		**4.0200**
Std. Deviation		.84491

Table 6.2 : The frequency of Peers factor

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.0	2.0	2.0
	Disagree Somewhat	13	26.0	26.0	28.0
	Undecided	21	42.0	42.0	70.0
	Agree Somewhat	14	28.0	28.0	98.0
	Agree	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Table 7: Determine the ranges for weighted average (the mean) using (7-Likert Scale)

The Opinion	Weighted average
Strongly Disagree	From 1 to 1.89
Disagree	From 1.9 to 2.79
Disagree Somewhat	From 2.8 to 3.69
Undecided	From 3.7 to 4.59
Agree Somewhat	From 4.6 to 5.49
Agree	From 5.5 to 6.39
Strongly agree	From 6.4 to 7.00

Table 8 : Determine the direction of opinion using Table 7 ranges

The opinion	Weighted average	Direction
Needs	4.6200	Agree Somewhat
Mastery	4.6200	Agree Somewhat
Power	4.1800	Undecided
Fear	4.1600	Undecided
Authority	4.2600	Undecided
Peer	4.0200	Undecided

By considering the Agree, somewhat agree, and strongly agree as agreed, the result (in table 8) shows students agreed that the Needs and Mastery factors motivate them. Whilst the students wasn't able to decide on Power, Fear, Authority, and Peers motivation factors.

Table 9 : Mastery Questions and its direction

Statement		N	Mean	Direction
M3	No matter how much I like or dislike a class, I still try to learn from it.(Mas)	50	5.26	Agree somewhat
M6	I feel that challenging assignments can be great learning experiences.(Mas)	50	4.58	Agree somewhat
M7	College helps me to gain valuable knowledge.(Mas)	50	4.00	Undecided
M8	My quality of performance is dependent on my grade in the class.(Mas)-R	50	4.18	Undecided
M12	I learn simply for the sake of learning.(Mas)	50	5.20	Agree somewhat
M27	I see myself as well-informed in many academic areas.(Mas)	50	4.54	Agree somewhat
M29	Sometimes I do more than I have to for an assignment to help me understand the material better.(Mas)	50	4.22	Undecided
M31	I enjoy learning about various subjects.(Mas)	50	4.50	Agree somewhat
M49	I like to spend time reading about things that interest me.(Mas)	50	5.22	Agree somewhat
M51	I try to do my best on every assignment.(Mas)	50	5.36	Agree somewhat
Mastery		50	**4.6**	**Agree Somewhat**
Valid N (listwise)				

Table 10 : Needs Questions and its direction

Statement		N	Mean	Direction
N1	I want to learn everything I need to learn.(Need)	50	5.58	Agree
N22	I work best in a group environment.(Need)-R	50	3.58	Disagree somewhat
N23	I do all that I can to make my assignments turn out perfectly.(Need)	50	5.06	Agree
N25	I sign up for the classes that will prepare me for the future.(Need)	50	4.76	Agree somewhat
N26	I have high expectations of myself.(Need)	50	5.30	Agree somewhat
N28	I get frustrated when I find out that I did not need to study as much as I did for a test.(Need)	50	2.74	Disagree
N33	I wait till the last minute to complete my assignments.(Need)-R	50	3.88	Disagree somewhat
N34	I would only sign up for a club if it helped me to reach a long-term goal.(Need)	50	4.46	Undecided
N48	I feel good about myself when I finish a difficult project.(Need)	50	5.78	Agree
N60	I set high goals for myself.(Need)	50	5.28	Agree somewhat
Needs		**50**	**4.6**	**Agree somewhat**
Valid N (listwise)				

d) The qualitative result

Instructors who participated in seminars and interview believes the English language play major role on motivation barrier. The language barrier affect students' ability to understand, learn, and ask questions. In addition, instructors believes incentives and strict regulation may help improving students' motivation. The interview and seminars questions in (Appendix D). Adding to incentives, the sense of completion is missing beside no enough recognition from college and instructors.

IV. Discussion

Needs and Mastery factors results prove the hypothesis that at least one factor affecting student motivation and rejected the negative hypotheses. Needs and Mastery results show that student agreed these factors affect their motivation. Having intrinsic motivation (mastery goals and the need for achievement) is encouraging result because it is an indication that student want to learn for sake of learning if they found the suitable environment.

Instructors agreed the lack of good English language prohibit students from achieving and impact their intrinsic motivation negatively. However, instructors believe have extrinsic motivation such as authority and fear of failure may help students to perform better.

V. Recommendations

a) Recommendation for college leaders

Students shows having sufficient intrinsic motivation but have some barriers; we recommend the following: revisit the English language level accepted in the college, provide incentive, encourage completion, treat students equally, listen to graduate feedback, force the ABET and NCAAA standards, and strengthen the rule and regulation.

b) Recommendation for college instructors

Students shows having sufficient intrinsic motivation but have some barriers; we recommend the following: encourage students to improve their English language; provide regular recognition; show willing to help; focus on course learning outcome; understand students' needs; and get students feedback regularly.

VI. Conclusion

The survey and interviews that conducted with students and instructors were very necessary to better understand the students' motivation. The paper were able to identify mastery and need as factors that affect positively the motivation of the CS and IS students. The paper discussed the factors roles on positively or negatively impacting students' motivation, analyzed the interviews and surveys data conducted with faculty members and students. In addition the paper provide recommendations for instructors and college leaders to address the motivation issues. In addition, the recommendation to improve the quality of learning outcome for CS and IS.

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