Factors affecting students' academic success at higher level: instrument development & its validation

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ABSTRACT

Present study was carried out to develop and validate an instrument for measuring different factors affecting upon students' success at higher educational level. Focus group discussions and extensive literature review was done in order to generate an item pool for the instrument. Initially 75 items were generated under ten dimensions namely: motivation, intellectual abilities, personality brought up, institutional environment, socio- economic background, family participation, peer group, influence of siblings, awareness about future goals and awareness about current trends in the subject. After qualitative item analysis, the items were reduced to 60 as 15 were found to be repetitive in nature. These 60 item statements were administered to 100 graduating students of public universities in Islamabad region. The data thus obtained was subjected to factor analysis. As a result ten subscales containing 45 items in total were constructed with Eigen value above 2.83. Split half reliability for both halves was expressed at .78 and .89. Psychometric properties demonstrate that SSHL is a valid and reliable instrument to be used in research studies related to students' academic success at higher level.

Introduction

"Success" is such an attractive condition for human beings that everyone starts struggling to achieve this destiny right after his birth. For a new born survival is the success and he struggles to achieve this in terms of sucking milk, identifying his loved ones and ensuring his safety by griping his mother's figure tightly. For a bit elder child success may be is the successful acceptance of his peer group. Success is always a prime goal for students in achieving educational targets. The rate and extent of success may vary for every student in his educational quest of achievement but every student wants to improve and get this fruit at its best sweetness.

Many variables are involved in the academic success of students at school as well as higher level (Crosnoe, Johnson & Edler,2004). The variables discussed below may have either a positive or a negative impact upon the academic life of students at higher level.

Student's Motivation:

Motivation can be simply defined as an internal force that helps us in moving towards or completion of some task. According to Tella (2007) motivation is getting more attention than other variables as it can help in the increasing performance and productivity at every level of learning. Many researches have been conducted to prove its role and function in student's achievement. As a result we come to know that motivation can depend upon the individual's personal factors that are called intrinsic motivation, or it depends upon others or the incentives attracting the attention of the individual rooted outside the individuals self that is called extrinsic motivation. Tella (2007) has conducted a study about the same topic and the results showed that motivation is effected by gender, and its intensity also varies from person to person. Wentzel (1998) presented the view that a person's interest in some subject can be an indication that there would be increase in the activity on behalf of individual to achieve his goals. Tella (2007) further explains that

some of the factors that affect motivation for educational achievement in a subject are intelligence of the student, thinking style and personality type of the student.

Personality brought up:

Personality is the sum total of an individuals thoughts, beliefs and effects of environment and family relationships. It is also affected by family environment and socialization techniques of the family members of the family. Personality brought up is also reflected in some behaviors like interaction patterns of a person like confidence, trust, and dependency or independency of the individual is rooted in the bringing up and the behaviors of the people around him in his childhood and later. For example if a child is brought up in a more organized environment, as a result his personality would be more principled than a child who is brought up in a chaotic environment (Hans, 1990).

Institutional Environment:

What ever you want to do you will require a suitable environment for fulfilling your task in effective manner .Learning is also a phenomenon that requires a number of factors to influence it effectively and positively. It also requires a proper environment to produce it and maintain it. Specially the environment provided in the educational institutions should be supportive and learning friendly to enhance the achievement rate of students. When we talk about the learning friendly environment we cannot avoid the role of teacher in it (Bennet, 1998).

Reynolds, Bollen, Creemers, Hopkins and Stoll & Lagerweii (1996) have conducted a research about the factors that are part of institutional environment and help in enhancing the achievement. They have concluded that there are five main factors that affect the performance of the student. These consist of the teaching of basic skills to the students, positive expectations from every student, formative assessment

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activities, positive and safe environment of school and educational leadership as most important factors.

Teacher is a very important factor that works in collaboration with school environment. As Donovan (1999), has suggested that teachers role as helper in understanding and using students pre-conceptions is very important. He also suggests that this practice would require a tough exercise of achieving deep understanding of the concepts by students. But it would not always be possible. So teacher would need to decide that which areas should be given exhaustive attention and how to motivate students for this exercise. Donovan also suggested that teachers should try to induce and develop the quality of meta-cognition in students for achieving high levels of achievement.

In investigating the effect of institutional environment on student's achievement another research was conducted by Bill and Melinda Gates Foundation (2001). They have identified some characteristics of school environment that can be supportive in student's high achievement rate. These include a common goal approach for student, teachers and administration for enhancing and struggling for high achievement of student. Another important factor discussed in this report is an environment of respect and responsibility. That allows the students to enjoy a respectable and close relationship with the teachers and other students. It can support them psychologically as is mentioned in Maslow's hierarchy of needs under the category of esteem needs. This research highlights another aspect of school environment that is the aspect of team work in staff members of the school. Parents should also be included in the team working for the improvement of student achievement. Another very important factor can be the use of technology in the institution that is considered to be very crucial in motivating and ultimately enhancing student's achievement. If we closely look at these dimensions these cannot work or play their role in isolation. These all support and enhance each other's effects on student's achievement.

Intellectual abilities:

Education is an intellectual activity that is also affected by intellectual abilities of students. Every human being is gifted with some special intellectual qualities. In this respect the multiple intelligence theory of Gardener would be of prime importance, who has described ten types of intelligences existing in humans in different combinations. These types of intelligences allow an individual in performing differently and uniquely in his educational career and achieve high or low levels of achievement (Gardener, 1987).

Socio-economic Background:

A research conducted by Hossler et al (1999) on the topic of the effects of socio-economic status on student's achievement suggests that socio-economic status includes educational level and income of a family or an individual. It further explains that children belonging to strong socio-economic background perform often lower than the students belonging to high socio-economic background as they are unable to utilize all the facilities enjoyed by the children of strong socio-economic background. The researcher also described that children of low socio-economic background have to face more challenging situations like less or no resources , part time job responsibilities, and in result high level of tension that can result in negative effects on their academic motivation. Hossler et al (1999) also suggest that families with low socio-economic status cannot provide their children with extra educational material, facilities as computer, and internet and part time tutors so it affects their child's performance negatively.

Family Participation:

Human beings are social beings and they cannot survive without the physical, social and emotional support of the family, group or clan. So when investigating the factors effecting the academic achievement of student how it was possible to avoid this aspect. Family supports an individual physically and emotionaly for higher level achievement in his educational career. Shonk & Cicchetti(2001) suggested that the behavior and treatment of family towards children effects their academic performance. If ,due to any reason children are not handled with care or are not supported positively by their family it causes the slowing down of the performance of student in his educational field.

Hossler, Schmit & Vesper (1999) have concluded that parent's level of education and support provided to the student is also an important factor in increasing the achievement of students at Post secondary level.

Role of peer group:

Along with the family, peer group involvement can also play a vital role in enhancing the academic achievement of the students. Many psychologists have suggested the use of peer support for enhancing student understanding and also supporting the teacher in using his teaching strategies. One of the main supporters of the theory of peer support for student's learning enhancement is Vygotsky, who presented the theory about peer tutoring for better learning in students (Kinderman, 1993).

Influence of Siblings:

Family is an important source of inspiration and emotional support for the student in achieving high grades in his academic career. A research conducted by Hossler and Schmit & Vesper (1999) states that student's selection process for institution is effected by many factors including student ability, sibling's educational status and level. Along with the selection of college the students are also inspired by their elder siblings. Ceja (2001) has presented the view that siblings provide feel much closeness to their siblings that's why they trust them and also make them the source of inspiration for them in their educational careers.
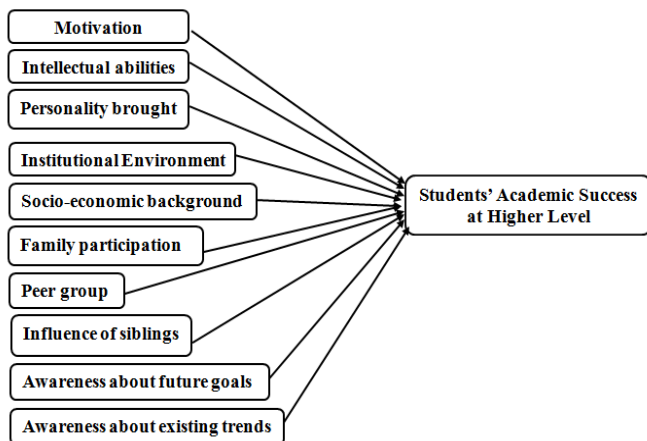
Awareness about future goals:

Education is a complex process which cannot be planned or arranged without formulating goals. Formulation of future goals for students and also communication of these goals to the student is a source of motivation for the students. But this is the function that has to be performed on institution's behalf. Parisa Rehmani(2011) conducted a research to explore the relationship between self esteem, awareness of goals and academic achievement. She states that academic goals provide a learner with the opportunity to think and plan about his academic achievement. Braten & Stromso (2004) stated that awareness of the achievement goals provides students a purposeful activity to move towards a specific direction.

In the same field Elliot & Church (1997) has presented a three dimensional framework for the achievement of academic goals. These three dimensions are named as (i) performance-approach goals, (ii) performance-avoidance goals and (iii) mastery-goals. These three can also be taken as three categories of the students and how they formulate and work towards these goals. They further explained that first category of students with performance goals likes to work hard and compete and compare against their peer. In result enhance their academic achievement. The other category exhibits careless attitudes towards the formulation of goals for themselves and also towards failures. The third category is more concerned about the mastery of skills rather than achievement of grades.

Awareness about existing trends in subject:

Awareness of existing trends can also be termed as the awareness of job market of the subject. It can also play an important role in increasing student's achievement in his educational career. If a student knows that whatever the subject he/she is studying can be very useful for him/her in future as it has a very good scope in the society. For this purpose different institutes formulate alumni associations. These associations provide feedback to not only students studying in the programs but also to the institutions for improving and sometimes altering the selection of input for the next time.

Theoretical Framework:

Motivation
Intellectual abilities
Personality brought
Institutional Environment
Socio-economic background
Family participation
Peer group
Influence of siblings
Awareness about future goals
Awareness about existing trends
→ Students' Academic Success at Higher Level

In this research study, students' academic success was considered as independent variable whereas motivation, intellectual abilities, personal brought up, institutional environment, socio- economic back ground, family participation, peer group, influence of siblings, awareness about future goals and existing trends were taken as dependant variables.

Methodology

Main objective of this research study was to develop an instrument to explore the factors affecting students' success at higher level (SSHL) and determine its psychometric properties. Following sequential procedure was adopted to achieve this objective.

Item pool generation

Item pool generation for proposed SSHL was done through intensive focus group discussions and extensive literature review. The detailed description of both steps is discussed below.

Literature review

For the purpose of development of SSHL, existing literature in the field was explored from research articles, journals, book, magazines, dissertations and internet. The available literature helped to identify various factors serving as dependant variables upon students; success at higher level.

Focus group discussion

Focus group discussion with university students was held in order to generate items for SSHL. A structured discussion based upon factors mentioned in the theoretical frame work of the study was carried out. This discussion helped in obtaining the opinions, ideas and feelings related to academic success of students at higher level.

Focus group guideline

Literature review and focus group discussions helped the researcher to construct a specific guideline. This guideline contained precise and concise statements based upon objectives of the research study. The statements mentioned according to the guideline were later distinguished as ten subscales of the

instrument namely; motivation, intellectual abilities, personality brought up, institutional environment, socio- economic background, family participation, peer group, influence of siblings, awareness about future goals and existing trends in the subject.

Composition of focus groups

A total of three focus group sessions were conducted for the above mentioned purpose. Totally 30 participants (students at higher level) took part in these discussions. Each session took about 50 minutes for its completion. The researcher noted important points of these discussions. All participants were acknowledged upon their participation and cooperation in this study. A pool of 75 items was generated using the above mentioned sources. After weeding out 15 items due to repetitions, 60 items were selected and converted as finalized statements of the initial item pool of the scale.

Qualitative Item Analysis

For determining face validity and qualitative item analysis, these 60 generated items were analysed by 3 judges; one from psychology and two from the field of education. These three experts were requested to evaluate the items in terms of their accuracy and relevancy according to objectives of the study. 10 items were discarded during this process. Remaining 50 items were arranged under 10 subscales of the questionnaire tentatively. This questionnaire was converted into 5-point Likert scale questionnaire with five close-ended options namely: strongly agree, agree undecided, disagree and strongly disagree.

Determination of Psychometric Properties of Proposed SSHL Scale

Population

Population of this research study included all graduating students of public sector universities in Islamabad region.

Sample

Samples of the study were selected through random sampling technique. Samples consisted of 100 randomly selected graduating students of Social Sciences. This sample included 50 male and 50 female students. 35% students belonged to high income group, 35% belonged to middle income group whereas 30% were taken from low income group so as to obtain variations in the responses.

Procedure

Data was collected through personal visits of the researchers. The respondents' consent was taken in written form and they were assured of confidentiality and anonymity. It was also assured that the data thus collected will be used for research purposes only.

Item Total Correlation

Internal consistency of SSHL was determined through computation of item total correlation. Statistical analysis revealed that all items had a significant positive correlation with the total scores, ranging from .73 to .87.

Split Half Reliability

The test was divided into two parts to determine its split half reliability. Both halves comprised of 22 items each. Reliability of first half was .78 and reliability of second half was .89.

Factor Analysis

The data was subjected to principal component analysis in order to determine its validity. Principal Component Analysis with Varimax Rotation was used to make this analysis. Initially, analysis was done while using n number of solution. But after that number of factors was reduced to 10 so as to have conceptual and clear factors. Factors with Eigen value of 2.83 and with factor loading at 0.30 were retained.

Table No 1: Factor Analysis & Total Variance

Total sums of squared loadings			
Factors	**Eigen value**	**% of Variance**	**Cumulative %**
1	3.44	6.83	17.21
2	2.78	5.89	18.55
3	3.06	6.43	24.76
4	3.00	6.00	21.47
5	3.22	6.70	26.50
6	3.21	6.68	26.58
7	2.60	5.75	18.55
8	3.81	7.21	24.33
9	2.43	5.60	31.65
10	2.84	5.93	33.85

Table No 2: Factor Structure of the Students' Success at Higher Level Scale for graduating students. *(N=100)*

Factors	Factor Loadings				
Motivation	**1**	**2**	**3**	**4**	**5**
1 I am devoted towards my studies.	.43				
2 I take responsibility of my own learning with enthusiasm.	.32				
3 I am motivated enough to participate in class room activities.	.54				
4 I have a strong belief on self respect and personal integrity.	.76				
5 I cannot maintain focus upon my studies due to slight tensions.	.55				
Intellectual abilities		.65			
1 I study with the intention of acquiring knowledge, not only to gain good grades.		.48			
2 I do not solely rely on my teachers' lectures; rather I try to study ahead of my teachers.		.72			
3 My academic records do not match my educational goals.		.70			
4 I use brainstorming to generate solutions to a variety of problems.		.64			
5 I mostly miss out nothing of important points of lectures.		.53			
Personality brought up					
1 I interact with my teachers and class fellows in a respectful and responsive manner.			.38		
2 I am very principled; therefore I always follow hard and fast rules given by my teachers and university.			.59		
3 I do not waste my time and always try to keep away from such activities which can cause time wastage and harm to my career.			.77		
4 I am lacking in problem solving skills.			.68		
5 I have failed to achieve good grades due to lack of time management.			.37		
Institutional environment					
1 My teachers are very cooperative.				.45	
2 My teachers always encourage me to get good grades in exams.				.53	
3 I do not violate the rules of my class and university.				.67	
4 I am fully satisfied by the courses taught in my class.				.36	
5 I am always given a chance to participate fully in the class.				.56	
6 I am given guidance by my teachers related to academic problems.				.62	
Socio- economic background					
1 My parents are able to afford my studies easily.					.47
2 I face difficulties in pursuing my studies due to lack of financial support from my parents.					.41
3 I am facing difficult learning conditions due to financial problems.					.54
4 I am doing a part time job to support my studies.					.67

Factors	Factor Loadings				
Family participation	**6**	**7**	**8**	**9**	**10**
1 My family is very supportive towards my higher studies.	.38				
2 I find it hard to communicate my academic problems to my family members.	.43				
3 My parents help and guide me in my academic and personal problems.	.55				
4 My family do not know about my academic endeavors.	.67				
Peer group					
1 My friends and class fellows appreciate me on my hard work and good grades.		.69			
2 My class fellows help me in completing my assignments.		.54			
3 My class fellows make fun of me whenever I lag behind in studies.		.39			
4 I am able to resolve conflicts effectively with my peers.		.46			
Influence of siblings					
1 I am less creative as compared to my siblings.			.62		
2 My siblings compete with me in my studies.			.41		
3 My parents always compare my grades with my siblings.			.57		
4 I have very healthy relationship with my brothers/ sisters.			.48		
Awareness about future goals					
1 My aim is to work hard and make a better future for my family and country.				.44	
2 My teachers have made me aware of future perspectives of my subject.				.51	
3 I am striving hard to attain my objectives.				.37	
4 I am indecisive about my future.				.64	
Awareness about existing trends in the subject					
1 I am fully aware of current trends in my subject.					.48
2 I continuously follow the newer trends of this subject.					.43
3 I frequently read the advertisements related to my subject in newspapers.					.39
4 There are lots of job openings in my subject					.52

Table No2 (continued)

After computation of factor analysis through SPSS 17, out of 50 items, 5 more were omitted as they were not significant enough. Total number of finally selected items was 45 for the scale SSHL. This item pool was categorized under ten categories with the help of two experts of the field.

Final selection and categorization of items

Finally selected 45 items were categorized as follows:

i. Motivation (5 items)
ii. Intellectual abilities (5 items)
iii. Personality brought up (5 items)
iv. Institutional environment (6 items)
v. Socio- economic background (4 items)
vi. Family participation (4 items)
vii. Peer group (4 items)
viii. Influence of siblings (4 items)
ix. Awareness about future goals (4 items)
x. Awareness about current trends in the subject (4 items)

Table 1 describes that 10 factors were extracted with Eigen values greater than 2.84. These factors explained 33.85 %ages of the total variance.

Discussion

Present research study was conducted to develop an instrument to measure factors involved in students' academic success at higher level and determine its psychometric properties. At present very few scales for this purpose are available. Students' academic success is dependent upon various factors. These factors have been assigned the value of subscales in this instrument. All ten subscales along with their factor loadings have been displayed in table no 2. The labels to these ten subscales have been assigned by the researchers on the basis of face validity given by the experts of the field.

Applied Significance

Students' academic success is dependent upon factors such as motivation , intellectual abilities ,personality brought up, institutional environment,socio- economic background, family participation, peer group ,influence of siblings, awareness about future goals and awareness about current trends in the subject. Those students who are not able to cope up with these factors may not succeed academically and it may have a bad impact on their professional life especially at the beginning of their career as well. The information given in this research may be helpful for: a) teachers, b) academicians, c) parents, d) educational planners/ educational managers, e) students and f) upcoming researchers interested in this field. Research results have implications for future research that may add to existing body of knowledge.

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