Management Controls of Students - Scale Development and Validation

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Abstract

Students' actions and behaviors needs to be controlled to ensure better academic outcomes. Review of literature identifies the gap that there is no instrument to measure students controls of students' behavior in a holistic manner covering both formal and informal controls. This paper develops a scale based on Merchants (1998) 'objects of control' framework for controlling students' behavior and actions. Formal controls includes *results and action controls* while informal controls includes *personnel and cultural controls*. Since there are no studies in the *management control systems* literature that have considered controls being applied to students, this study reviews *school effectiveness and school improvement research* to draw items for scale relating to students controls. Descriptive correlational design using survey method was found suitable for the study. Simple random sample of private unaided schools affiliated to a state board of examination was drawn. A close ended questionnaire was administered to teachers teaching in tenth class only. In all 241 teachers from 51 schools participated in the study. Classical test theory was used to develop the scale. Confirmatory factor analysis, post hoc analysis using sub samples, multiple validity tests were conducted to check the robustness of the scale, and it was found appropriate for future use.

Keywords: Management Control Systems, Students Controls Scale, Secondary Teachers, K–12 Private Unaided Schools, India.

1. Introduction

Schools are not like business organizations in terms of final product or service they provide. However, since they are organizations, management control systems (MCS) form an integral part of the school functioning. According to Tucker and Parker (2013) the trend towards a confluence of various sectors is in agreement with neo institutional theory. Based on this viewpoint, schools may adopt many structural and processual aspects of for-profit organizations, including approaches to MCS. However, differences between schools and commercial organizations will influence the context in which MCS operates.

Madan (2012) argues that public institutions like schools share the essential characteristics of private institutions, and so many of the same processes and method can be used in them. The concerns and directions of the top are expected to be implemented by employees at various levels in effective and competitive manner. The strategies include detailed surveillance of behaviour, output, etc. At the same time, schools like any other organizations are believed to be formed not just by formal rules and norms but by the cultures that emerge within them. Teacher and student identities and the process of identity work are seen as integral to how teaching and learning takes place. Improvement of schools takes the form of cultivation of commitment rather than, say, scrutiny of what is being done and reward or penalties for them Studies on school effectiveness and school improvement have provided substantial evidence that students have an important bearing on school outcomes. It is also acknowledged that students' behaviour and actions need to be controlled through rules, policies, etc. However, there are no studies that have applied the MCS framework to study students' control in school. This study identifies the gap in the literature on MCS in schools and proposes that Merchant's 'objects of control' (1998) framework can be used to study the types of controls applied to students.

Merchant (1998) takes a "broader view of MCS" and defines control as "all the devices managers use to ensure that the behaviors and decisions of people in the organization are consistent with the organization's objectives and strategies". Personnel limitations of employees, lack of motivation, and lack of direction are stated as three main reasons for having controls. Four types of control - action control, results control, personnel control and cultural control - are identified as "objects of control". Each type of control can be used tightly or loosely. The objective of this framework is to control human behavior. There are no instruments that

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have measured types of controls applied to students. So this study develops constructs of control types as identified by Merchant and prepares and validates a management control of students scale.

This study is structured as follows. Section two presents a brief review of studies relating to students controls in schools and identifies the gap. Section three discusses the research design and provides variable definitions. Section four elaborates on the process followed for questionnaire development and revision while Section five summarizes the results of reliability and validity tests conducted for scale development. The last section discusses the relevance of scale, limitation of the study and scope for future research.

2. Review of Literature

Agasisti, Bonomi, and Sibiano (2012) quoting from earlier studies, state that the quality of learning is influenced to a great extent by the way schools are managed as compared to resources available to them. Abbi (2013) found school management as a leading factor in influencing the quality of primary education. School management makes policies that are conducive to the academic environment. As such, school management is a very strong factor in influencing the academic achievement of students.

There are many studies that have studied MCS in educational organizations. Weick, (1976) states that in the case of schools there is a loose control on the work but tight control over who does the work and on whom (students). Murphy, et. al., (1982) have identified policies on student's progress as crucial for determining school performance. These include policies related to giving homework to students, grading assignments, monitoring academic progress, arranging remedial for weak students, reporting students' progress, and setting promotion (retention) policy of students.

Purkey and Smith (1983) state that explicitly stated rules and policies that are consistently, fairly, and firmly applied reduce behaviour problems among students that hamper their learning. At the same time, rules and policies also develop feelings of pride and responsibility among school members thus contributing to school effectiveness. Scott (2011), applying Simons (1995) 'levers of control' framework to schools, states that schools convey their belief system through their charter. Many policies and rules with known consequences, if not followed by students, make their boundary systems. Within schools, information on budgets and student outcomes are the primary examples of diagnostic types of controls. Also, MCS information is used in an interactive manner during school planning days.

Kyriakides, et. al., (2010) identify four important school-level factors affecting school performance. The first two factors relating to school policies on teaching and students learning environment refer to actions schools take to help students and other participants in the system have clarity on what is expected from them. The last two factors relate to the systems and channels used to assess the functioning of the first two factors. Kyriakides et. al., (2010), quoting Creemers (1994) claim that "control is one of the major principles operating in generating educational effectiveness."

Kyriakides et.al. (2010) report a direct effect of school policies on student's outcome. They identified school policies relating to admission, teaching, evaluation of the policies on teaching, and policies on school learning environment as having an effect size of more than 0.13 on student's achievements. Student's achievements in these studies were considered either as cognitive, affective, and psychological performance or a combination of these.

Aidla and Vadi (2008) found that schools where students indulged in activities such as violence, robbing, disorder, etc reported lower academic achievements. Also, many studies have shown a strong relationship between student's engagement with extracurricular activities and their grades. Extracurricular activities increase student's involvement that helps them to perform better, resulting in increased levels of achievement. Wiesenthal et al. (1997) found that schools with focus on homework policy improved school climate, student work habit, student knowledge acquisition, students' attitude, and parent involvement.

Previous studies refer to more formal controls being applied to schools. There are studies that have found that informal controls also play a significant role in schools. Tucker and Parker (2013) in their study of nonprofit organizations including education, state that informal MCS rather than formal MCS is the predominant means of exercising controls in these organizations. Among various forms of informal control, "management by walking around" was the most prominent form of control. Madan (2012) cites previous research as holding either or position between a control and command approach and a commitment approach. While strong forms of both approaches appear to be improving school functioning, it was the mild and mixed models that tended to fall between two stools.

We reviewed many studies which examined specific control items and these are mentioned in section four relating to questionnaire development. Based on the discussion, it can be said that students' controls play a significant role in

school functioning. We did not come across any instrument that measures various control types applied to students. This paper develops a tool for measuring controls applied to students in schools. It covers both formal and informal controls and is contextual.

3. Research Design

This section provides an outline of the methods used in conducting the study. As this study develops a scale, descriptive correlational design (Creswell, 2011, p. 337) using surveys (Creswell, 2011, p. 375) was adopted. Diamond's (2000) framework was used for planning and conducting this study.

Based on the type of management, schools in India can be classified as government schools or private schools. Private schools are either government aided or unaided. The performance of students enrolled in private schools is better than their counterparts in public schools.As per the Annual Status of Education Report (ASER) of 2013 (Pratham, 2014), private schools have done much better than government schools. Fifty-nine per cent of children of class 3 in private school can read class 1 level texts compared to 32.6 per cent children of same class in government schools. Even at class 5, private schools maintain their lead as 63.6 per cent children from these schools compared to 41.1 per cent children of government schools can read class 2 level texts. The scenario is same for arithmetic.

Kingdon (2007) reports better academic performance of private school students compared to students of government school, even after considering the differences in schools' student intake. Tooley et.al. (2007) in their study of schools in Hyderabad found that test scores of children enrolled in private schools were approximately one sigma higher than that of children enrolled in government schools. Muralidharan and Kremer (2006) used nationally representative data to compare students' performance in private and government primary schools situated in rural India. They found that private school students performed better by 0.41 sigma than students' from government schools of the same village even after taking into account various home and school characteristics. Desai et al. (2008) found that, after controlling for variables such as parental socio-economic status, highest qualification of any adult family member, household size, number of children under age 15, and state of residence, children's enrolled in private schools performed better in reading and arithmetic than children enrolled in government schools. Chudgar (2012) found that, after accounting for variables such as sex, age, SES, parent

schooling, household type and size, children enrolled in private school performed better on reading and mathematics than those enrolled in government schools.

It is also reported that there is enormous difference in performance of private unaided schools in terms of marks of students and other outcomes (Narula, 2012; Sujatha and Geeta Rani, 2011). Since private unaided schools in India have a considerable autonomy in managing school affairs, differences in school MCS may explain the difference in performance between these schools. In the Indian context, it becomes all the more important as private unaided schools have seen a phenomenal growth over the last two decades as shown in Table 1. So this study develops a scale for students control relevant to private unaided schools.

Population for the study consisted of secondary teachers of K-12 private unaided schools while the survey unit was secondary teachers. Ahmedabad city was chosen for drawing the sample. In the city approximately 75 percent schools are affiliated to the state board of examination. The sampling frame was drawn from the website of the Gujarat Secondary Education Board (GSEB) and school information books published by the Ahmedabad District School Principal Association. Based on these two sources a sampling frame of 188 schools was prepared.

Simple random sampling was used to draw a sample of 100 schools. On average three responses were expected from secondary teachers of each school making a total of 300 responses. A close-ended questionnaire was used to collect data from respondents. Multiple statistical tests such as Cronbach alpha, composite reliability, exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and FornerLacker Criterion were conducted using IBM SPSS STATISTICS (Version 22) and IBM SPSS AMOS (Version 20).

Bisbe, Batista-Foguet, and Chenhall (2007) have criticized management accounting studies for lack of construct definition. This study paid particular attention to the conceptual specification of constructs. Theoretical and operational definition of constructs of control types - results, actions, personnel and cultural controls - are based on Merchant (1998), modified to students' context to suit the purpose of the study.

> *Result controls* are a form of control in which students are highly rewarded for good performance and treated as heroes in schools while punished for bad performance including class repetition and expulsion from school. School is not particular about students being regular

in class, doing homework etc as long as they achieve good marks. The operational definition includes items with respect to recognition, security, autonomy and plum assignments.

Action controls aim to ensure that students perform actions that are stipulated by the school and are not held accountable for the results which action produces. The operational definition includes items with respect to pre-action review, action accountability, behavioural constraints, and redundancy.

Personnel controls are defined as providing students with necessary training (like remedial sessions) and resources to do their studies. The operational definition includes items with respect to job design, provision of necessary resources, and training.

Cultural controls are defined as controls that work in organizations due to shared tradition, values, and beliefs, etc. which may be written or unwritten and work through peer pressure in the group. The operational definition includes items with respect to the code of conduct, group rewards, students' rotation, physical arrangements, social arrangements, and tone at the top.

Based on above conceptualization all four control types were measured as latent constructs with reflective variables.

4. Questionnaire Development and Revision

Based on the literature, a questionnaire was prepared. There are no previous studies relating to four control types in the school context. All items were taken from a review of case studies, experimental studies, and survey studies in the domain of school effectiveness and school improvement literature. Studies referred to are Abdullah and Kassim (2011); Aidlaand Vadi (2008); Bray and Lykins (2012); Diwan (2011); Dong, Liu, and Ding (2012); Monds, Wang, and Bennet (2013); Fugazzotto (2009); Gray (2004); Hallinger (2011); Hallinger and Lu (2013); Hulpia and Valcke (2004); Muralidharan (2013); Mythili (2013); Pratham (2011); Purkeyand Smith (1983); Rosenholtz (1985); Sammons, et al., (2011); Scoop News (2011); Sebastian and Allensworth (2012); Sen (2010); Slate, et al., (2008); Stemler, Bebell, and Sonnabend (2011); Sujatha andGeeta Rani (2011); Suraweera (2011); Teodoroviæ (2009); Thoonen, et al. (2011); Tyagi (2011); Verma (2009); Weiss and Piderit(1999); Wilkins and Balakrishnan (2013); Witte and Walsh (1990). (A list of items will be provided by the authors on request.)

Student's controls had a total of 29 items. Student's results

controls had nine items. It included allowing students to appear in tenth board examination,; promoting students to tenth standard; withdrawal of student from school after ninth standard; informing parents about performance after every test (examination); assigning responsibilities to students: rewarding students for academic performance in school and in competitive examinations; and encouraging students to take tuition for good academic performance. Action control included five items relating to ensuring attendance in class, completing homework, discipline, and acquiring additional resources in library, lab etc so students did not miss on learning.

Personnel control for students included six items related to organizing additional sessions for improving performance, career counselling, co-curricular activities, and providing adequate infrastructure facilities for students. Cultural control of students had nine items with respect to grouping of students, achieving school mission and vision, and ensuring equity to students. On the control items, we constantly kept in mind that questions were framed to seek the perception of teachers about controls applied to students and not facts about controls as stated in a rule book. The focus was on perception about restrictions in practice. It was decided to use a five-point Likert scale to measure these constructs.

After the questionnaire was had been prepared, it was given to two professors from a reputed management institution for checking its face validity. Based on suggestions the five-point scale for measuring items relating to controls constructs was changed to '1= never and 5= always'. At this stage the questionnaire was given to an expert in the area of school education. No significant changes were suggested. The questionnaire was then rolled out for pre-testing with secondary teachers of three English medium schools. Based on pre-testing two items relating to recognition of students who are rankers in school, and securing a rank in the board exam, Olympiads, etc. were changed from perceptual to factual.

The revised questionnaire was given to an ex-head of a linguistic department of a university for translation to Gujarati. Validation of both English and Gujarati versions was done by a professor of marketing who had translated many English books to Gujarati and wrote columns in Gujarati newspapers regularly. The translation was found appropriate. For reverse conversion from Gujarati to English, the questionnaire was given to the principal of a school. Based on suggestions some changes were made he English

version to meet the reverse conversion requirement. At the same time, a few changes were made in words in Gujarati questionnaire since it was felt that words used were more technical and teachers might find it difficult to understand. A question relating to students carrying mobile phones, etc. was changed from "Students carry mobile phones, video games, etc. on school premises" to "In our school students who are found carrying mobile phones, video games, etc. on school premises face strict action". Finally, the Gujarati questionnaire was pre-tested with teachers of a Gujarati medium school and was found appropriate.

Fifty schools were selected from randomly arranged sampling frame for pilot data collection. Three e-mails were sent out to them over a period of one week introducing the topic of study and establishing credentials of researchers. A mail was sent to school principals with a copy of the letter from the post bearer of Ahmedabad Principals Association. This letter stated that no confidential information was sought from school and requested principals to cooperate. Positive reply was received from only one school; other schools did not reply to the mails at all.

There were very few schools where principals had seen the e-mails sent earlier and gave permission to administer the questionnaire in very first visit. Most principals didn't check their mails very often. Many school principals did not have computers on their desk. Photocopies of letters sent to them by e-mail was provided and a brief about the research work was given for permission to administer the questionnaire to teachers teaching in tenth class and had been with school for more than a year.

In some schools, especially those serving low-income group students, principals were themselves trustee and a subject teacher. This quickened the process of decision making. Most of them agreed to administer the questionnaire. But in other schools, principals were hesitant in giving permission since all decisions were taken after consulting with the trustee. So meetings were held with trustees to persuade them to participate in this study. In all 120 teachers from 26 schools completed the questionnaire.

A detailed analysis was conducted of the data, and five-factors emerged for students control scale. Results control scale had two factors, one relating to internal controls by reward and punishment and another relating to external control by encouraging tuition. Many items got dropped in arriving at factor solution. Taking a conservative view, seven items having a negative or insignificant correlation with more than 50 percent of items under the same construct

were removed. In construct relating to students result controls, one item, 'academically weak students who fail in the ninth standard are promoted to tenth standard', was found irrelevant. Principal told us that as per guidelines from the District Education Office (DEO), if a student did not secure minimum pass marks, he/she was given remedial sessions and then examined and promoted. So this item was dropped. This guideline is an extension of a provision in the Government of India (2009) RTE Act where a school is not supposed to fail a student up to eighth class. Based on these changes a revised questionnaire was drawn for final data collection.

5. Scale Development and Validation

The second block of 50 schools was taken from the already arranged sampling frame for final data collection. To this list schools contacted during pilot analysis but not converted were added. Three emails were sent to schools in a week's time before starting final data collection as was done earlier. Some schools did not cooperate in data collection. The DEO was approached for help and permission was sought to tell schools that the DEO office had requested cooperation. When this was tried with two schools, they gave permission to administer the questionnaire survey but the questionnaires had to be left with the principal. Many responses were incomplete. So it was decided to convince schools on our own.

In all 121 teachers from 31 schools participated in final data collection, resulting in 241 responses from 57 schools. The effective annual fees charged by school to tenth class students varied from a low of Rupees 1,200 to a high of Rs. 35,000 with an average of Rs. 8,896 per year and standard deviation of Rs. 7,192.5. Number of students in each school varied from a low of 100 to a high of 3500 with a median of 911.5 students. Average school size was 1018 students and the standard deviation was 706.79. Mostly of the schools had one section in tenth class exceptwhile one school which had nine sections. Number of students in tenth class varied from a low of five to a high of 484 with a median of 54 students and an average class size of 77 students. Schools covered in this study had started offering tenth class as early as 1987 and as late as 2013,. with median year being 2004.

There were 130 female and 105 male teachers; 152 of these teachers were post graduates, 58 were graduates, 14 had completed high school, 11 were M. Phil / Ph.D. 187 had undergone B.Ed training, 15 had undergone M. Ed training while 33 teachers did not have any training. Six teachers did not provide information about gender, education

qualification, training and experience. Average teaching experience was 7.8 years with 5.7 years at tenth level and only 4.1 years (including current academic year) at the current school teaching tenth class.

Respondents with more than 10 percent missing items and who had left sections completely blank were removed. Little's MACR test (Meyers, Gamst, and Guarino, 2013, p.88) was applied to assess the nature of the missing value pattern. Chi-square value of 331.188 with significance of 0.533 confirmed that data were missing completely at random, so values were filled using simple linear regression. Outlier analysis was conducted using box plots (Meyers et al., 2013, p.128) leaving 204 responses from 55 schools. Since this dataset was part of a larger dataset, common method bias was checked for the complete dataset. Harman's single factor test was applied using principal component analysis (PCA) without rotation. As the first factor explained a small proportion of variance in data, common method bias was ruled out (Podsakoff, et al., 2003). Overall response rate was 80.28 per cent (57 out of 71 schools approached) which showed that non-response bias being not very high is is not a cause of concern.

For scale development, Cronbach alpha was calculated for assessing the reliability of each dimension. Based on the analysis, one item was removed from personnel control of students to increase alpha value. Also one entire construct of results control - internal with three items was dropped due to a small alpha value of 0.515. All other dimensions reported alpha value above 0.6 as shown in Table 2.A value of 0.7 or higher indicates adequate reliability; however, a value above 0.6 is also considered acceptable (Nunnally, 1967, p. 226; Peterson, 1994).

Factor structure was derived using IMB SPSS. Exploratory factor analysis (EFA) was conducted for each dimension using PCA withand varimax rotation. It confirmed the one-factor solution for all constructs except cultural control of students which resulted in the two-factor solution. The second factor had two items with loading above 0.5 and so was retained at this stage. Now four control types relating to students control were put together for examining four factor students control scale. Again PCA with varimax rotation was used. Factors with eigenvalue more than one were retained resulting in four-factor solution explaining 64.30 percent variance. Explained variance above 60 percent is good (Meyers et al., 2013, p. 708). All cross-loadings were removed to the extent possible retaining at least three items for each construct. Kaiser-Meyer-Olkin (KMO) test gave

value of 0.706 and Bartlett's Test of Sphericity was significant at p value less than 0.001. These tests are measures of sampling adequacy, and KMO value of above 0.7 is considered adequate (Meyers et al., 2013, p. 691). Descriptive statistics for these control items is given in Table 3.

To confirm above factor structure, CFA was conducted using AMOS. No items were dropped at this stage. The final values showed a reasonable fit (Byrne, 2001, pp. 82–85) and confirmed our scale. To further examine the fitness of the four-factor control scale, this initial model (H1) was compared with a competing model H2. In the case of H2, a second order CFA model was drawn based on the four first order control constructs. The second order construct of 'Management Control of Student' was drawn as a reflective construct by fixing its variance to one. These competing models were compared using various fit indices and chi-square difference test (Byrne, 2001, p. 114) to determine the better fit of the initial model (H1). Table 4 confirmed our initial four-factor solution (base model H1) as a better fit. Fit indices for both H1 and H2 models were obtained after drawing two covariance's path between error terms in the CFA diagram. These paths were drawn based on two modification indices values (Byrne, 2001, p. 90) given by AMOS output (Table 5).

One way to establish discriminant validity is to verify that item loading on related construct is greater than its loading on other constructs. Table 6 provides loadings of each item on the respective construct that is marked bold, and its cross-loadings on other constructs. It is clear that item loading on the associated control construct is greater than cross-loadings on other control constructs and so discriminant validity is established (Hair, et- al 2013, p. 105).

The above method of comparing loadings and cross-loadings for establishing discriminant validity is considered liberal. So FornellLarcker Criterion (FLC) analysis was used to determine the discriminant validity of all constructs (Hair et al., 2013, p. 107). According to this criterion, the square root of average variance extracted (AVE) of a construct should be higher than its correlation with other constructs. Also composite reliability (CR) is a better measure of validity as it considers different loadings of the items associated with a construct(Hair et al., 2013, p. …..). Table 7 shows the values of CR, AVE, FLC and other measures like maximum shared variance (MSV) and average shared variance (ASV) (calculated using Gaskin (2012) "Stats Tools Package").

Hair et al.,(2012, p. 107) and Hair et al., (2013, p. 832) have

suggested values of 0.7 for CR, 0.5 for AVE, and MSV, ASV to be less than AVE, and the square root of AVE to be greater than inter-construct correlations for meeting convergent and discriminant validity. Tseng, Dörnyei, and Schmitt (2006) and Diamantopoulos and Siguaw (2000 p.91) have suggested that CR should be greater than 0.6. FornellandLarcker, (1981) say that CR alone is sufficient to establish convergent validity even if AVE is less than 0.5. Ylinenand Gullkvist, 2014 reported AVE of 0.375 and CR of 0.639 for the construct of organic control and used it in an analysis. Based on these threshold values, it can be concluded that all constructs meet the reliability and validity requirements.

A post hoc analysis was also conducted for Management Controls of Students Scale. The dataset was divided into subsets based on school fees and school medium of instruction. School fee was measured as the effective annual fee charged to tenth class students, and a median split was used as the basis for creating subsets based on school fees. Medium of instruction was classified as either English or Gujarati. These factors may influence control practices in schools (Table 8 show valid results). Slightly small values for English medium and low fee-charging schools may be due to the small sample size of these subsets.

To assess the predictive validity of this scale a relationship was hypothesized between students control types and teachers workload stress. Teacher's workload stress was measured by using a four item subscale of workload stress drawn from Klassen and Chiu (2010). A two-step process was followed for this purpose. First, the structural model was tested for all four control types and workload stress using CFA. Results showed a reasonable fit (CMIN/DF = 1.756 at $p < 0.001$, GFI = 0.916, IFI = 0.927, TLI = 0.904, CFI = 0.927 and RMSEA = 0.061). It confirmed that teachers workload stress and students control types are different constructs. Next, a measurement model was tested between four control types and workload stress. No study had drawn a relationship between students control types and teachers workload stress. So this study tested a non-directional null hypothesis of no significant association between students control types and teachers workload stress. Findings show the null hypothesis was not accepted. Student control types explained 26.6 per cent variance in teachers workload stress and all path coefficients were significant at $p < 0.05$ except personnel control of students. Based on modification indices a path from ACS (Action Control Students) to PCS4 (School organizes additional remedial

sessions for academically weak students) was also found significant. It is logical as students' action control helps determine whether students' needs additional help for improving academic achievements.

6 : *Discussion, Limitation, and Scope for Future Work*

The above analysis confirms a four-factor model for students' control. Action controls, based on the mean value of 4.46 on a five-point scale, are the most prominent form of controls applied to students followed by cultural, personnel, and results controls. Action controls include measures relating to students attendance, discipline and timely completion of homework. This control is necessary but not sufficient for students' performance. This control helps the school identify students' who require additional academic support and motivation for improving performance. Other three controls try to address this requirement of students. Items relating to personnel control of students include measures such as organizing remedial sessions for academically weak students and career counselling for all students. These measures have a direct impact on school performance. On the other hand, items relating to results controls (external) include measures like tuition and withdrawal of students from the school lead indirectly to ensure good results. Good pass results and students' securing ranks influence admission in private schools. The school advertises their success results through newspapers, pamphlets, and hoardings to influence parents' decision about choice of school for their child. So results control (external) is an important mechanism used by schools to ensure students' performance. Cultural control emphasizes school mission through various activities to create an environment where students work through peer learning to achieve school goals and objectives. Group rewards are used as incentives to promote this culture. These 12 control items can serve as a basis for measuring and improving school control functions.

The study was conducted in a scientific manner. But there is always a scope for improvement. In this study responses for students' controls were sought from teachers. Better responses could have been obtained if students weare administered questionnaire relating to controls exercised on them. Also due to time and resource constraint, this study was conducted in schools affiliated with one state examination board in a city. This limitation influences the generalizability of results. Future studies can be conducted across boards and geographical areas. Even with these limitations, the results are robust and can be used for

managing students to improve the teaching – learning process.

There is considerable scope for future research. First, the scale can be tested over time and geographical area for establishing reliability and validity. Although this scale is prepared for private unaided schools, it can be tested for government and private aided schools and also across various education levels such as primary and higher secondary. Second, this scale can be used to study the

association between students' performance, stress, and satisfaction of various stakeholders like students, teachers, and parents. Third, there is a debate in the literature on the nature of control constructs. Future studies can prepare a student's control Index using formative constructs and compare the predictive power of both instruments to confirm whether control constructs are formative or reflective.

Table 1: CAGR of Institutions

Year	Primary 1993-2003	Primary 2003-2013	Upper Primary 1993-2003	Upper Primary 2003-2013	Secondary 1993-2003	Secondary 2003-2013	Higher Secondary 1993-2003	Higher Secondary 2003-2013
Govt.	2.08%	3.55%	3.90%	6.85%	2.50%	5.87%	5.90%	8.12%
PU	-0.60%	5.90%	1.22%	10.12%	2.30%	1.92%	5.40%	0.23%
PUA	**6.98%**	**16.77%**	**11.88%**	**11.33%**	**9.20%**	**9.09%**	**11.70%**	**13.90%**

Note –Authors own calculation based on data from 1. DISE and 2. Development of Secondary Education In India, Sujatha and Geetha Rani (2011)

Table 2: Cronbach Alpha for All Constructs

No	Construct	Cronbach Alpha
1	Cultural Controls of Students	0.699
2	Action Controls of Students	0.685
3	Result Controls of Students – Internal	0.515
4	Result Control of Students – External	0.622
5	Personnel Control of Students	0.794

Authors own calculations using IBM SPSS STATISTICS Version 22.

Table 3: Descriptive Statistics

Item[a]	Mean	Std. Deviation	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Minimum	Maximum
CCS1	4.32	.856	-1.772	.170	4.140	.339	1	5
CCS2	4.25	.862	-.891	.170	-.126	.339	2	5
CCS3	4.25	.888	-1.194	.170	1.193	.339	1	5
ACS1	4.56	.801	-2.284	.170	5.842	.339	1	5
ACS2	4.18	.881	-.877	.170	.215	.339	1	5
ACS3	4.64	.739	-2.571	.170	7.395	.339	1	5
RCS2	1.79	.976	1.130	.170	.794	.339	1	5
RCS4	1.50	.980	2.142	.170	3.976	.339	1	5
RCS5	1.21	.678	3.455	.170	10.956	.339	1	4
PCS2	4.21	.981	-1.088	.170	.374	.339	1	5
PCS3	4.25	.888	-1.152	.170	.851	.339	1	5
PCS4	4.25	.944	-1.348	.170	1.606	.339	1	5

a. CCS stands for cultural controls of students, ACS for action controls of students, RCS for result control of students, and PCS for personnel control of students.

b. Authors own calculations using IBM SPSS STATISTICS Version 22.

Table 4: Comparison of Competing Models

	Base Model H1	Comparative Model H2
Chi Square	76.077	84.335
Degrees of Freedom	46	48
CMIN/DF	1.654	1.757
GFI	0.946	0.939
IFI	0.953	0.943
TLI	0.931	0.920
CFI	0.952	0.942
RMSEA	0.057	0.061
AIC	**140.077**	**144.335**
Chi-Square Difference Test		
	ΔX^2	**Δdf**	**Critical value**
H1 vs.H2	8.258	2	5.991 at p = 0.05
Authors own calculations using IBM SPSS AMOS Version 20.		

Table 5: Covariance Path Drawn Based on Modification Indices

No	Path	item	Covariance's	Path	Item / Construct
1	e1	School recognizes good team work of students in group projects & assignments etc.	<—>	e10	School encourages students to participate in various career counseling events and forums.
2	e2	School encourages team work by giving group projects etc. to 10th standard students.	<—>	e5	A student is required to submit an application signed by his/her parent if he / she fail to complete his / her homework.
Prepared by authors based on output of IBM SPSS AMOS Version 20.					

Table 6: Items, Loadings and Cross Loadings

	Rotated Component Matrix[a]					
Code	Item	Variance	Component			
			1	2	3	4
PCS3	School encourages students to participate in various career counseling events and forums.		**0.889**	0.190	0.059	0.005
PCS2	School provides formal career counseling services to students.	**29.394%**	**0.829**	0.202	0.098	-0.035
PCS4	School organizes additional remedial sessions for academically weak students.		**0.572**	0.227	0.333	-0.052
CCS3	School recognizes good team work of students in group projects & assignments etc.		0.09	**0.852**	0.038	-0.008
CCS2	School encourages team work by giving group projects etc. to 10th standard students.	**14.563%**	0.262	**0.775**	0.146	-0.089
CCS1	School emphasizes its mission & vision in various activities involving students.		0.199	**0.707**	0.066	-0.076
ACS1	A student is required to submit an application signed by his/her parent if he/he is absent from school.		-0.033	0.106	**0.844**	-0.087
ACS2	A student is required to submit an application signed by his/her parent if he/she fail to complete his/her homework.	**11.570%**	0.158	0.077	**0.749**	0.068
ACS3	A student is required to get signature from parents for remarks made in their diary by teachers about his / her indiscipline.		0.324	0.034	**0.626**	-0.226
RCS5	School encourages students to take tuition from school teachers while preparing for the 10th board exams.		-0.09	-0.075	-0.129	**0.838**
RCS4	School encourages students to take tuition while preparing for the 10th board exam.	**8.774%**	-0.027	-0.026	-0.11	**0.819**
RCS2	Academically weak students who do not perform well in 9th standard withdraw from the school.		0.024	-0.045	0.047	**0.607**
a. CCS stands for cultural controls of students, ACS for action controls of students, RCS for result control of students, and PCS for personnel control of students.						
b. Authors own calculations using IBM SPSS STATISTICS Version 22.						

Table 7: Values of Reliability, Convergent and Discriminant Validity

FornellLarcker Criterion

	CR	AVE	MSV	ASV	RCS	CCS	ACS	PCS
RCS	0.683	0.442	0.099	0.055	0.665			
CCS	0.742	0.493	0.356	0.165	-0.228	0.702		
ACS	0.660	0.394	0.173	0.120	-0.315	0.296	0.628	
PCS	0.781	0.551	0.356	0.181	-0.114	0.597	0.416	0.742

Authors own calculations using Gaskins (2012) ⁻Stats Tools Package .

Table 8: Post Hoc Analysis for Sub Samples

		N	CMIN/DF	GFI	IFI	TLI	CFI	RMSEA
Medium of Instruction								
	English	91	1.678	0.888	0.895	0.838	0.887	0.087
	Gujarati	113	1.394	0.912	0.957	0.935	0.955	0.059
School Fees								
	High	110	1.433	0.916	0.945	0.916	0.941	0.063
	Low	94	1.671	0.890	0.904	0.854	0.898	0.085

Authors own calculations using IBM SPSS AMOS Version 20.

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