What Does an MA Know?

Postgraduate Learning Deficits and the Diploma Disease in Social Sciences

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The annual Pratham surveys point to deficits of learning endemic to Indian schools. But what if these deficits are being carried forward and sustained in higher education? This paper shows that the results of a survey conducted among postgraduate students of economics in an Indian university were very Pratham-like. The objective was to assess their understanding of basic arithmetic operations and some primary economic principles/indicators. Is it the case, particularly in the social sciences, that we are receiving and, in turn, churning out generations of students who lack an understanding of basic principles? If so, what are the institutional mechanisms in place to sustain this long continuum of ignorance?

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In a classroom of second-year MA (Economics) students, an introductory lecture on international economics was under way. The topic being discussed was the growth of post-war international trade and the following is a brief account of how it unfolded.

> "World exports grew from ... billion dollars odd in 1960 to ... billion in 2010," said the teacher. Some of the students promptly noted down the numbers.
>
> "Don't you think the numbers are mind-boggling?" the teacher added, trying to make them appreciate their magnitude. "Try comparing them with India's GDP ... roughly speaking, what do you think is India's GDP?"
>
> The class remained silent. "7%," said one of the students taking the initiative, mistaking it for gross domestic product (GDP) growth rate. "1,000 million," shouted another boy immediately, steering the response in the right direction. The answer paved way to every student voicing a number.
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> "250 billion," said one. "No, 250 billion is very high. It could be around 250 million," shouted another. Some of the students tried to be more exact. "I think it is 3,800 crore." "19,000 crore." "870 million." "92 billion." "Not 92 billion, it is 92 trillion."
>
> "Are these in dollars or rupees?" enquired the teacher. The class appeared divided with the rupee ayes outshouting the dollar ones in patriotic fervour.
>
> What happened further in the class need not be taken up here. But at the end of the lecture, one of the girls walked up to the teacher. She had an honest query that she felt embarrassed to ask openly. "Madam, what is a million?"

As shown in Pratham–Annual Status of Education Reports (ASER) over the past decade, the education attainments of children in Indian schools remain qualitatively suspect. Even as students move through the figurative conveyor belt of education, they repeatedly fail to perform basic reading and arithmetic tasks meant for students from earlier grades. Given the steep contraction in the number of enrolments from secondary to higher education in India, the hunch would be that poor performers in schools are more likely to gradually fall away from the system. They could either drop out or fail to cross the twin hurdles of public examinations in Classes X and XII. However, our contention is that a significant number does pass through these filters into higher education. In particular, in the social sciences, is it the case that we are receiving and, in turn, churning out generations of students who are higher-level versions of Pratham schoolchildren?

In this paper, we present the results of a survey conducted among postgraduate students of economics in a reputed, state-run Indian university. The objective was to assess their

understanding of basic arithmetic operations and some primary economic principles/indicators. The results were very Pratham-like. But, as we suspect, neither the discipline nor the university concerned are unique in this. When a Class VII student cannot solve arithmetic operations meant for Class IV, it reveals the poor state of schooling. But when a postgraduate cannot solve an arithmetic problem meant for Class VII, what is to be inferred? The answer is not so straightforward. In higher education in the social sciences, there are channels/pathways—perhaps even deliberately created—that do not require knowing any arithmetic. In a subject such as economics that has acquired a mathematical orientation globally, a lack of numerical familiarity among students has serious implications on how the subject is being shaped domestically—how syllabi are framed, classes conducted, and examinations evaluated. At the risk of generalisation, it leads to introspection on what a typical MA (Economics) student really knows.

At the same time, the survey results become a point of departure for a larger enquiry. How does a longer continuum of ignorance/mediocrity form, stretching beyond schools into higher education? What are the institutional mechanisms in place to sustain it? Dore (1976) in his seminal work on the "diploma disease" first diagnosed the disturbing trend of education getting reduced to a "ritualised process of qualification-earning." As summarised by James (1998: 356), the disease was not as much about "individuals pursuing qualifications … rather it was about how pedagogy became pathologically infected by the pressure to ensure good examination results ... it was not individuals who caught the disease, it was school systems." How do these seemingly contradictory tendencies co-exist, chronic learning deficits on the one hand and the quest for better examination results on the other? Are these two processes functioning independently and in separate pools of students? Or alternatively, is it possible to not know much and still be able to score high?

As we reckon, the diploma disease manifests itself in strong faculty-wise segregation in India. We remain concerned about its social sciences mutations, particularly where the disease combines with learning deficits. The social sciences are not only witnessing an escalation/inflation of qualifications, a typical symptom of the diploma disease, but also, worryingly, qualifications being acquired at very low thresholds of quality, undermining both the degree and the person acquiring it. How else does one explain an elementary algebraic question "5y = 100. Solve for y," first found in textbooks of Class VI, resurfacing at a much senior level in a third-year Bachelor of Arts (BA) (Economics) university-level paper under the title "Quantitative Techniques"? While the question may appear to be an "easy" one, it hints at a systemic awareness of the low academic attainments of students who are going to attempt it.[1]

With the understanding that a majority are going to find it difficult, a mathematical question comes with a generic, non-mathematical option, "Explain the importance of research methodology (in 100 words)," for which an equally generic, standardised answer is available in guides, or printed notes. Examples such as these are illustrative of deep-rooted learning deficits being systemically carried forward.

In Section 1 of the paper, we explore connections between learning deficits from schools being perpetuated and fed into variants of the diploma disease at higher levels. In Section 2, we present the results of our survey and trace the systemic processes responsible for learning deficits that have stayed rooted in the social sciences.

1 The Tricky Pathways in Creating Human Capital

Economic literature from the 1960s saw the crystallisation of human capital, the skilled version of labour transformed through education and training (Schultz 1961; Becker 1964). Globally, this change of perspective on labour formed the underpinning of a policy-driven emphasis on investing in education. Levels of human capital stock were seen to affect growth rates in the economy (Ashton et al 1999: 8). Countries that understood and applied this logic witnessed higher growth rates. Japan, followed by the East Asian economies, remains an often-cited case (Clark and Roy 1997), particularly in comparison with India and South Asia.

In India, the post-independence expansion in education did coincide with an emerging consensus around building human capital. However, educational pathways in India (as elsewhere across developing countries) were, and are, ridden with hurdles. Two important sets of literature point out the qualitative deficiencies hindering expected outcomes.

1.1 Schooling–Learning Gaps

Increases in student enrolments are easier to quantify as measures of educational progress, but what matters is the quality of education acquired. In India, the annual Pratham–ASER findings have repeatedly drawn attention to learning deficits that chronically persist in schools. In their standardised assessments, students are typically tested on their ability to read a basic text, write a sentence, and perform elementary arithmetic operations such as addition/subtraction—tasks which they are expected to manage with ease, but turn out to be formidable hurdles.

Dreze and Sen (2013: 122–23) provide a review of recent studies on learning deficits in India. As they point out, school education suffers from two principal deficiencies—first, limited coverage, and second, poor standards of education offered and received. The former, while being a serious impediment, would amount to a restricted base for generating human capital. The latter would raise the question whether any capital can be generated at all. Across developing countries, "the considerable progress in increasing enrollment over the past decade will be jeopardised when children, parents and communities realise that the poor quality of education diminishes the promised economic and social returns" (Van der Gaag and Adams 2010: 4). As argued provocatively in Pritchett and Banerji (2013: 17), if schooling is not going to deliver on learning, "it is hard to justify all the money that is spent on schools."

1.2 Diploma Disease Syndrome

Citing from Little (2003: 441), Dore's diploma disease arguments formed the most powerful social/institutional critique of human capital generation in developing countries.

> The simple economic argument goes like this: Educate one child and he or she becomes a hundred dollars more productive a year. Educate a million children and they become a hundred million dollars more productive … If only it were so simple. You see, something happens on the way. To educate a million you have to create systems and institutions. You need to grade and certify, arrange exams and diplomas—and that's where the problem arises, because the business of grading, certifying and awarding diplomas can overshadow the business of educating. The examination tail comes to wag the educational dog.

Dore (1976) brought forth the rising importance of examination performances in linking up education, qualifications, and employment. As he states, while "education is learning to *do* a job, qualification is a matter of learning in order to *get* a job" (8, emphasis in original). However, in developing countries/societies—as a consequence of the "late development effect" (72–83)—the rate of school enrolments can outstrip the rate of creation of modern sector jobs one is aspiring to through education. This sets into motion a vicious cycle of "one-upmanship" through pursuing higher qualifications, feeding into the arguments on academic/credentials inflation (Collins 2002). Degrees remaining equal, the higher the marks, the more claim one has of being qualified. In the ensuing competition, examination results become the "be-all and end-all of schooling" (81) at the expense of genuine education.

In later years, the disease has come to be used synonymously with the "paper qualification syndrome" (Cooksey and Riedmiller 1997), where individuals are continuously climbing a spiral of qualifications/degrees. But as Dore (1997: 25) clarifies, the disease is not about individuals becoming mindless paper-chasers. It is a systemically induced or compelled phenomenon, affecting societies rather than individuals. Dore's hypothesis has found resonance in several studies focusing on the ill effects of examination-dominated education systems, particularly in developing countries (see Little and Singh 1992; also see the *Assessment in Education* special issue on the diploma disease [1997]). However, there is more to the disease than the emphasis on examinations. What of the learning deficits creeping in from schools that have to be addressed by examinations at a higher level?

1.3 Learning Deficits and the Diploma Disease

The existence of learning deficits resulting from poor teaching is one of the key complexities to be accounted for in the unfolding of the diploma disease. For Dore, the ritualisation of education stems from processes within the classroom—"the teachers' emphasis on teaching for the examination, sticking to the syllabus, concentrating on learning to remember rather than to understand, showing extra attention to the bright boys who have a chance of making it" (1976: 81). But teachers remain culpable in more ways. For teachers to do all that Dore presumes them to be doing, they have to be present in the classroom. More than overdoing it, teachers may not be doing enough. Baseline studies in Indian states pointing at low learning achievements also point to low rates of teacher attendance and engagement with teaching (Pandey et al 2010: 75). "Twenty-five percent of teachers were absent from school, and only about half were teaching, during unannounced visits to a nationally representative sample of government primary schools in India" (Kremer et al 2005: 658). The type of school is an important variable in the quality divide, with private schools seen to perform better than government ones (Kingdon 1996; Tooley and Dixon 2006).

Reversing Dore's argument, while teaching is being oriented towards examinations, what about the effect of examination-oriented teaching on examinations themselves? How do examinations cope with this pressure building up from within schools? The problem for examinations comes from both ends, from the regimented high-scoring lot as well as the anxiously poor-scoring ones; this is particularly palpable during the Class x and xii examinations. On the one hand, these exams are meant to carefully scrutinise a hyper-competitive segment of students, where every mark counts for further admissions. One can imagine the fine-combing involved in determining why one candidate should get 98.66% and another 98.33%. Despite the grading difference, the two candidates cannot be fundamentally very different from each other. At the same time, the exams cannot remain indifferent to the baggage of learning deficits creeping up the system. The academically weaker segment of students has to be dealt with a softer, liberal hand while marking. Being too harsh in marking would fail the student, and also would mean clogging the conveyor belt of education at a point where the candidate is supposed to get off it. In individual examination papers such as English or Mathematics, the usual suspects for failures, the systemic way of dealing with them is nudging the candidate past the passing hurdle of 40%. This arrangement works well across different stakeholders. The candidate, for one, is relieved to have cleared the examination and even collectively got some 45%, 50% or even higher percentage, and a degree to his/her name. At the same time, s/he is also in nobody's way, not vying for competitively coveted seats. For the examiner, it spares the burden of having to check an additional answer-sheet the next time around, presuming the failed candidate would reappear. The system on its part has churned out another student, with the onus of testing his/her worth now left to the higher education or employment markets.

1.3.1 How Learning Deficits Scale Up

When learning deficits first surface across schools, they may be systemically widespread. But, at the same time, they remain isolated from each other. This is because the functions of teaching and assessment remain unified under the same roof in schools. Individually, schools could adopt varied approaches to gloss over or dilute the problem—framing questions from limited portions of the syllabus, providing question banks before exams, liberal marking patterns, and so on. However, starting with the public examinations of Classes x and xii and through graduation, while teaching takes place in schools and colleges, the responsibility of conducting examinations is transferred to a centralised authority (boards of education or universities). This delinking of functions means that learning deficits spill over beyond the containers of classrooms/schools

and have to be tackled at a macro level. The onus of grappling with the deficits now shifts to impersonalised forms of examination systems.

When a Class VII student cannot attempt questions from Class IV, in addition to the schooling–learning gap, it is also a reflection on porous policies of promotion. How has a student progressed to Class VII without knowing the subject matter of Class IV? In schools, recent policies of no-detention may partly help explain the puzzle. But if learning deficits are to be carried forward, similar policies of no-detention (or at least of maximum promotion) would have to be tacitly practised in higher education as well. Depending on how the higher examinations are framed and evaluated, a broader continuum of poor quality can be systemically accommodated.

1.3.2 Learning Deficits and Curriculum

As discussed in a World Bank report (2012: 15), education can impart skills of three types—(a) academic skills that get directly measured through maths and literacy; (b) generic or life skills that generally include critical and creative thinking, behavioural and computing skills; and (c) technical skills directly associated with one's profession. In a cumulative manner, it is posited that "primary education systems can provide basic academic and generic skills. Secondary education systems can provide more advanced academic and generic skills, as well as some technical skills. And tertiary education systems can provide all three types, of a higher order." But with prior academic skills not in place, the further trajectories get warped. The supposed advanced skills may never be introduced. They may find mention in the curriculum but invariably be missing in classroom proceedings. More than learning, learning deficits become a continuous, cumulative feature within systems. There are "older deficits," the deep-rooted ones in mathematics and language-based tasks such as reading and writing from schools. Fast forwarding, "newer deficits" strike root once specialisations emerge after Class X.

With uncertainty about whether lower-level skills have been acquired, higher education may repeat chunks of earlier curriculum. Higher-level examinations may end up testing skills that should ideally have been tested before. In other words, higher degrees could be on offer for lower-level skills. Thus, when Dore states that much of education is merely qualification earning—"ritualistic, tedious, suffused with anxiety and boredom, destructive of curiosity and imagination" (p ix), we might add, and "grossly repetitive," thanks to learning deficits. This repetition could manifest both in terms of syllabus from earlier classes and questions from previous years' examinations.

1.3.3 How Learning Deficits Get Comfortable

For answering this, we make two assumptions. First, it would be reasonable to presume that those with learning deficits would get low marks in Class X, the terminal year for schools (if they reach this stage). Second, if they are to continue in education, they are more likely to get enrolled in courses/institutions where admissions are less competitive. Their low scores would inherently limit their options.

Dore presumes that low-scoring candidates move out from the educational track and shift early to working ones. His criticism of schools is centred on the argument that they do not sufficiently prepare this "'unsuccessful' majority for life and entry to work (1980). But this presumption about academically weaker students entering work early in life may not be entirely true. For sizeable chunks getting pushed through the system, low marks notwithstanding, the quest for higher qualification continues. Some further complications to the neat work–study compartmentalisation have been discussed later.

Student segregation in schools may take the form of practices such as ability-based grouping; say, division A having better performers together compared to division B. Moving into higher education, this segregation acquires a disciplinary/faculty casing. Class X, the common-for-all examination, remains a key juncture leading to the disciplinary trifurcation of arts, science, and commerce. The "first boys" (Sen 2005) or academic out-performers from schools typically vie for sciences, going on to pursue professional courses such as engineering and medicine. What of the "also-rans," the poor performers, with scores of say 50% or less? They have a tendency to gravitate to arts or commerce, more so in the vernacular medium. In certain cases, classrooms could be overwhelmingly dominated by low-scoring candidates. Thus, if learning deficits from schools are perpetuated in higher education, the social sciences remain one of the most likely avenues of doing so. The specifics of disciplinary segregation of students could vary across cities and state boards, but we expect the general trend to hold true.

Globally, the interpretation of human capital is being narrowed down to capacities in STEM subjects—science, technology, engineering, and mathematics. This is already pushing social sciences to the periphery of human capital (a term ironically coined in economics, a non-STEM subject). Going further, as pointed out in Wang (2013: 1081), "Intent to major in STEM is directly affected by 12th-grade math achievement, exposure to math and science courses, and math self-efficacy beliefs—*all three subject to the influence of early achievement in and attitudes toward math*" (emphasis added). For the ones with learning deficits, given their weak training in maths, entry into STEM remains tacitly blocked from school itself. Their only chance of higher qualifications is in the social sciences. Concerns on the deteriorating status of the social sciences in India have been periodically voiced in research (Vaidyanathan 2001; ICSSR 2007; Vaidyanathan 2008; Guha 2008). Deshpande (2002: 3628) writes of low competencies of candidates applying for teaching and research positions, even in the so-called elite social sciences institutions. These trends have to be traced to the entry-level dynamics affecting the pool of entrants in the social sciences.

Table 1 (p 44), drawn from the centralised admissions in Pune city, puts some numbers into the argument. In science, if the cut-offs are any indication, the fine-grading of students creates more homogeneous pools in classrooms moving from Classes X and XI. Extremely selective pockets in commerce (English medium) and arts (English medium) serve as hubs of

Table 1: Cut-off Percentages for Class XI Admissions in Pune City, 2013–14

Admission Cut-offs (%)	Number of Centres/Colleges				
	Science	Commerce		Arts	
	English Medium	English Medium	Marathi Medium	English Medium	Marathi Medium
Above 90	12	2	–	1	–
85–90	21	–	–	2	–
80–85	20	5	–	–	–
75–80	16	8	–	3	–
70–75	16	7	4	1	1
60–70	22	24	27	2	3
50–60	10	17	27	5	9
Below 50	52	41	39	23	58
Total number of centres	169	104	97	37	71
Percentage of students admitted with less than 50% marks in Class X	1.8	10.8	22.8	12.9	40.9

The cut-offs are for the open category; cut-offs for the reserved categories are relatively lower.
Source: Sikshan Upasanchalak Karyalaya, Pune website; http://dydepune.com/

high-scoring candidates as well. Competition for entry to these institutions could be fierce, on a par with science admissions. On the other extreme, arts (Marathi medium) classrooms are reduced to clusters of low-scoring candidates. Just as high-scoring candidates converge to certain institutions, so do low-scoring ones—importantly within a disciplinary aegis.

While we see low marks as a consequence of poor-quality education, a couple of caveats are warranted. Our intention is not to belittle the low-scoring candidates and stigmatise them as not worthy of studying further. We are merely referring to a gradation that is systemically relied on. Unfortunately, in a marks-centric evaluation, other life skills of the candidate hold little relevance to further admissions. More importantly, there is a need to probe the systemic archaeology that goes into making low scores. Plagued with learning deficits, are students expected to perform any better? To put it somewhat bluntly, students who are at the receiving end in one phase of education go on to turn tables as they move further, and the social sciences are a passive victim in this.

1.3.4 Diploma Disease Cannot Be Only about High Marks

References to the disease are synonymous with a systemic pressure for high marks. Majumdar and Mooij (2012) term it "the marks race" endemic in Indian schools. Even in shadow education literature—dealing with the vast network of coaching institutions and private tutoring—the pressure for examination success creates a backward linkage of formal education with additional or supplementary tutoring (see Bray 2007: 68). However, the high-marks pathways account for only one variant of the disease. They feed into streams with hypercompetitive modes of entry that, in turn, lead to the professional, fast-track lanes towards (more likely, though not guaranteed) employment. As discerned from the social sciences, even those with poor results do not escape the disease.

Extending our previous argument, those securing low marks get relegated to educational tracks with weaker or uncertain job prospects. It amounts to running that much longer in the quest for employment. For social science students, a visible track of high-earning employment remains teaching itself. This is where students have to compete in extremely restricted pools with similar qualifications. But academic employment is also a strenuous, long-winding path, a graduation leading to post-graduation, into a Bachelor of Education (BEd) or National Eligibility Test (NET)/State Eligibility Test (SET) qualifications and further to doctoral degrees, a seemingly endless sequence of ritualistic qualification earning. The effect of credentials inflation across this journey could be as severe as in professional tracks, if not more. As described perceptively in Collins (2002: 24),

> Lower degrees have not lost all value, but their value is increasingly within the educational system, as a way station toward acquiring yet higher levels of education. A high school degree has become little more than a ticket into a lottery where one can buy a chance at a college degree, and that in turn is becoming a ticket to a yet higher level lottery. Most degrees have little substantive value in themselves; they are bureaucratic markers channeling access to the point at which they are cashed in, and guaranteeing nothing about their value at the point at which they are cashed.

This argument would be particularly true in the social sciences, given their weak linkages with employment markets. What is worse, these degrees may already have been devalued in the process of acquiring them because of the infiltration of learning deficits.

2 Postgraduate Learning Deficits: Results of the Survey

2.1 Methodology

(i) An exploratory survey was conducted across postgraduate centres of economics in a state-run university in Maharashtra. The survey questionnaire comprised three sections—(a) information on personal and academic backgrounds of students and future plans for employment; (b) elementary questions on economic theory/economic indicators; and (c) school-level questions on arithmetic. The respondents could attempt the questionnaire in either Marathi or English.

Rather than drawing a sample, the survey hoped to cover the entire urban universe of students studying in the second year of the MA course in economics in colleges/centres affiliated to the university. However, several factors inadvertently led to limiting this universe. In many centres, enrolments were lower than total intake capacities. The numbers had further declined with variable dropouts between MA first year and second year. The level of dropouts could not be ascertained by college authorities as they could not be separated from the absentees. Absenteeism was endemic, but the same lot could appear for the annual university-conducted examinations as full-time registered students. This arrangement blurred the lines between full-time and external students. In some colleges, absenteeism had been internally factored in. Smaller classrooms were allotted for lectures accommodating only up to 20–25 students, grossly insufficient if the full strength were to turn up.

Colleges had to be repeatedly contacted since the authorities were unsure of the number of respondents that could be randomly contacted. The survey could be administered only when the authorities were satisfied that they could provide us

"adequate" numbers. The norms of "adequacy" were based on their own judgment of how many students attended classes off and on and could be convinced to be present on the particular day of the survey. In some colleges, students were personally contacted by college staff to be present for the survey.

With these constraints, the survey conducted during September and October 2012 managed to cover 200 respondents spread across 12 of the 17 urban postgraduate centres (including the university department). Of the five omitted institutions, one could not be contacted, two had very low enrolments, and the survey had to be cancelled in two colleges since they could not be sure of "adequate" students. To the extent possible, the survey remains representative of the urban universe of MA (Economics) students of the university (Table 2).

Table 2: A College-wise Outline of MA (Economics) Intake and Survey Participation

College	Admissions in MA Part I	Admissions Retained in MA Part II	Number of Students Appearing for Year-end Exam, 2013	Number of Students Included in the Survey
1	62	51	39	35
2	12	7	11	7
3	52	46	39	16
4	10	7	8	7
5	60	54	58	12
6	24	18	21	12
7	60	25	29	7
8	35	30	28	12
9	60	30	38	23
10	60	50	64	25
11	60	42	31	23
12	60	60	46	21
Total	555	420	412	200

(ii) The survey results led to a look back into the higher secondary and graduate-level curriculum of economics in the university/board. It included a close reading of the syllabus, question papers for annual university examinations, textbooks, and preparatory guides/printed notes available in the market.

2.2 Sidelining Maths the Systemic Way

Globally, economics has become more mathematically oriented since the 1940s and 1950s, a trend described by Blaug (2003: 145) as the "formalist revolution" in economics. This intellectual turn has not been without its share of criticism. With mathematics swamping the curricula in leading universities, students of economics have become more engrossed in learning techniques but are "neither encouraged nor equipped to analyse real world economies and institutions" (Hodgson 2004). Or as Blaug states, "Economists have converted the subject into a sort of social mathematics in which analytical rigour is everything and practical relevance is nothing" (cited in Hodgson 2004).

In drawing on this debate, our purpose is to register some of the unexpected undercurrents of resistance to the economics–mathematics nexus. The resistance is not at the level of methodology. As a reminder of Dore's arguments, it is institutional in character, coming from classroom compositions rooted in learning deficits and poor numeracy skills. Year after year, as armies of poorly-schooled children have moved up the educational ladder, they have opted for the social sciences, some of them eventually specialising in economics as well. Given their non-mathematical leanings, argumentatively they may not be formidable opponents to those in the mathematical camp. But they have the advantage of numbers on their side, enough to force the educational system to ensure that their academic pathways remain cleared of mathematical thorns. Self-reinforcing mechanisms are in place to sustain a maths-free curriculum, given that these very students with poor maths go further to become teachers and are involved in framing the syllabus.

In our survey, students were asked elementary mathematical questions based on the Class VI textbook of the Maharashtra State Board of Education. There were six in all, covering integers, subtraction, percentages, squares, fractions, and algebraic equations. The results are given in Table 4 (p 47). Only 11 of the 200 students could answer all of them correctly. The proportion of correct answers across each individual question ranged between 20% and 38%. The figures are a déjà vu of Pratham results at a much higher level. However, there is more to the answers than simply a correct–incorrect binary. It is the logic of incorrectness that more reveals the state of numeracy. For instance, in the question on solving (2/3–1/2), a common wrong answer was 1. It was arrived at by subtracting the numerator and denominator independently. In many questionnaires, the answer was written in this very form—"1 divided by 1." Students were also not aware of 1/2 being the same as 0.5. Similarly, $(-2)^2 + (2)^2$ was answered as zero or (–8). Across a host of other incorrect answers though, it was difficult to track how they were arrived at. It led to an unsettling introspection on whether students had understood the question at all. What kind of systemic undercurrents could be held responsible for these lapses?

Citing from Tobias (1993: 33), "a slight discomfort with mathematics acquired in elementary or secondary school can develop into full-fledged syndrome of anxiety and avoidance by the time one has graduated from school and gone to work." As we reckon, mathematical learning deficits do more than feed into maths anxieties. The latter suggests an inability to cope with mathematical jargon being introduced; learning deficits create a bubble of comfort within the system, keeping the thresholds low, and buffering students from the anxiety at multiple stages of education.

2.2.1 Science Requires Maths, Arts Does Not

The maths–non-maths divide of the different faculties starts surfacing immediately after Class X. In higher secondary, science students go on to grapple with calculus and higher geometry, a significant spurt from the Class X level of mathematics; the ones in commerce deal with numbers of a different kind, concentrating on accounts and tallying; and in arts, the objective both of students and systems is to keep a safe distance from the numerical world.

In the university concerned, this separation from mathematics/statistics was ensured through a careful assortment of compulsory and optional courses at different stages. Maths/statistics only featured in compulsory courses at two stages. In Class XI, chapters on introductory statistics were included in the textbook of economics, with the contents being introduction to statistics, graphical representations, central tendency, and index numbers. However, Class XI examinations are internal to the college. Therefore, these chapters are conveniently skipped or diluted down. Statistics resurfaces in BA third year in the form of a compulsory paper on "Quantitative Methods and Research Project." The syllabus for this subject is not fundamentally different from the Class XI curriculum for statistics. In fact, some of the topics go back to school—compound interest, simultaneous equations, ratios, and percentages.

As far as optional papers in maths are concerned, there were limited takers among arts students at the Class XII board examination. In graduation, only one college offered mathematical courses, the rest citing lack of interest among students coupled with a lack of faculty. Similarly, at the masters' level, only one institution offered courses in mathematics, statistics, and econometrics.

2.2.2 Art of Making Maths Non-mathematical

The sphere of tension built by maths is because of its emphasis on right answers (Tobias 1993: 37–38). Mathematical questions are perceived as dual-edged swords, fetching either zero or full marks. One way of countering maths anxieties would be to make students comfortable with the precision of maths—this would involve pedagogical interventions that can help students overcome the fear of numbers. The other (easier and commonly practised) way out would be to take the precision out of maths and make it a descriptive, "textual" subject like the papers in economics. The following is an illuminating case of how maths gets tamed, taken from the third year BA exam in "Quantitative Techniques" at the university.

Question 1. Answer the following questions (any two): (10 marks)
(1) What is importance of tabulation of data?
(2) Explain the sources of hypothesis.
(3) Solve: 200 – 8y = 2y + 50, y = ...?
(4) Find compound interest on Rs 12,000 for two years at 10% rate of interest.

Questions (3) and (4) are from school maths. But they have been "regulars" in BA examinations as well (April 2011: Find the compound interest on Rs 20,000, for four years at 5% pa; April 2012: Find compound interest on Rs 12,000 for two years at 10% rate of interest; April 2013: Find the compound interest on Rs 10,000 for five years at 8% rate of interest.) And yet, why attempt numerical questions and risk losing marks over calculations when options like (1) and (2) exist? Students can attempt the full paper on quantitative techniques without having anything to do with numbers. The vagueness of the non-mathematical questions gets complemented by equally vague answers, with some marks assured for whatever is written. This is the secret behind how the system facilitates those with learning deficits not only passing, but also scoring high marks.

2.3 Diluting Economics the Systemic Way

In the survey, questions on economics were framed into two sets of economic theory and corresponding indicators. They dealt with basic introductory concepts such as GDP, population, per capita income, savings ratio to GDP, sectoral segregations in the economy, marginal productivity—topics taught from Class XI onwards. The survey results are tabulated in Tables 4, 5 and 6 (p 47). Just as in maths, students were on unfamiliar terrain in economics despite being at the stage of completing their post-graduation. This reiterates our argument on learning deficits striking roots at every stage in delivery systems. Only two students could give a roughly correct estimation of India's GDP and per capita. Of the rest, a majority were way off target both in value and in units. The ignorance of basics could be traced to the dilution of economics in the long journey of seven years of apparent "specialisation."

2.3.1 Teaching and Learning Something in the Name of Economics

The elimination of maths has affected economics subjects as well, which have had to be treated in a non-mathematical, descriptive way. In subjects like development economics or macroeconomics, there was a tendency to skip models that required mathematical derivations. Worse still, such models could be eliminated from the syllabus. Even in mundane, day-to-day teaching, the lack of maths posed challenges of its own. How can a teacher introduce an indifference or demand curve to students who cannot plot a line on a graph? For students, the only recourse would be to memorise the curve, not as part of the coordinate system, but more like a picture.

As mentioned in the introduction, students confronted numbers without understanding their significance or mutual connectivity. The easier way of relating to them was through memorising. Responding to one of the survey questions, students knew that India's GDP comprised the primary, secondary, and tertiary sectors. But they had not grasped that cumulatively, the sum would be 100%; in many answers, the sum went far beyond 100. This could be a lack of economic

Table 3: Repetition of Questions at Different Levels of Education

No	Questions	Subject/Course Title	Examination
1	Explain the causes of low productivity of Indian agriculture.	Agricultural Economics	FY BA (2011, 2012, 2013)
		Development and Environment Economics	TY BA (2012, 2013)
2	Explain progress of cooperative movement in Maharashtra.	Indian Economy	FY BA (2012, 2013)
		Banking and Cooperation in India	SY BA (2011, 2013)
3	Explain characteristics of Indian economy (as less developed economy).	Indian Economy	FY BA (2010, 2011, 2013)
	Explain characteristics (economic/demographic) of less developed countries.	Development and Environment Economics	TY BA (2010, 2012, 2013)

understanding, but it was also an outcome of the way the topics were introduced in the classroom sans numbers.

2.3.2 The Study Material and the Guiding Lights

A second form of dilution was in the resource material relied on by students (and even teachers). The official syllabus on the university website comprises a hallowed list of reference books written by reputed international and Indian economists. In reality, though, none of them was actually referred; they were not even stocked in college libraries. Moreover, the books were in English, posing a language barrier for a majority of students who came from the vernacular medium. Consequently, the most relied on resources were either class-notes dictated by teachers in Marathi, which were circulated extensively, or guides. Further condensed versions of guides in the form of flimsy pre-examination quick notes, with model questions and answers, were extremely popular among the students. As one of the notes claimed, they were tailor-made for scoring "maximum marks" in exams.

Table 4: Mathematics Questions and Responses

	Questions	Answered		Not	Some Incorrect
		Correctly	Incorrectly	Attempted	Answers (Frequencies)
1	$17x = 5x + 3$. Find value of 'x'.	47	95	58	4 (25), 1 (14)
2	12 out of 50 students read a newspaper regularly. What is the percentage of students who do not read newspaper regularly?	53	117	30	24 (28), 38 (17), 78 (9)
3	1234–4321	55	92	53	3087 (22), - 3113 (4)
4	1234–4321.33	41	73	86	3087.33 (11)
5	$(-2)^2 + (2)^2$	77	94	29	0 (55), -8 (16), 16 (8)
6	$^2/_3$–½	56	95	49	1 (35), 2 (9)

2.3.3 The Repetition Disease Striking Examinations

Writing on the diploma disease, Somerset (1997: 95) comments that one of the most pervasive weaknesses in examinations is their propensity to focus on the testing of passive, inert knowledge. This passive knowledge could be from a watered-down curriculum. Like the example in the Quantitative papers, the repetition of questions in economics from previous years' papers added to the monotonous ease of qualification earning. As students "progressed" to the next level, subjects varied but their contents overlapped. An added feature in economics papers, therefore, was the repetition of questions with minimal variations across subjects at different levels of education, as seen in Table 3 (p 46).

2.4 Facing the Job Market with an MA Degree

One finds sporadic, market-based reports stating that only a small proportion of engineering graduates in the country have the requisite skills for employment, leading to greater on-site training. The implicit assumption is that engineering as a degree has employability though the students have not been trained appropriately. Comparatively, how would a postgraduate degree in the social sciences fare in the employment race?

What kind of jobs were students with MA (Economics) aspiring for? As a reminder of the uncertain future they foresaw for themselves, 73 of the 200 students in the survey left the question blank. Among those who answered, the most common options were predominantly public-sector jobs—in teaching, Union Public Service Commission (UPSC)/Maharashtra Public Service Commission (MPSC) jobs (government bureaucracy), and in public-sector banks. In qualifying the diploma disease, Little (2006: 121–22) states that the size and prestige of the public sector and the presence/emergence of a vibrant private sector would eventually temper the use of educational certificates for occupational selection. But at least in the social sciences, this has not strictly been the case. In an economy where the private sector has grown, a majority of social science graduates have not managed to get absorbed in newer manufacturing or service jobs. Career opportunities for social scientists remain limited and they form a substantial part of the unemployed educated population (Krishna and Krishna 2010: 79). If the struggle is about skills that are transferable from education to non-academic worksites, learning deficits make the adjustment all the more difficult.

Across the jobs preferred by students, graduate certificates were only a matter of providing eligibility. The actual selection

Table 6: Questions on Economic Theory and Responses

	Questions	Answered		Not
		Correctly	Incorrectly	Attempted
1	GDP (Market Price) + Net Income from Abroad =?	53	52	95
2	Population explosion is characterised by …birth rates and…death rates.	117	28	55
3	Per Capita Income = (…) / (…)	89	56	55
4	If total output decreases as the labour increases, then marginal productivity is…	22	156	22
5	Marginal Propensity to Consume (MPC) + Marginal Propensity to Save (MPS) =	35	70	95

Table 5: Questions on Economic Indicators and Responses

	Questions	Answered		Not	Some Incorrect Answers
		Correctly	Incorrectly	Attempted	
1	What is India's GDP for the year 2011? (in US dollars)	2	29	169	$1, $1.5 million, $15 million, $30 trillion, $4.3 million, $45, $50, $7.2 million, $725, 5.00%, 5.4%, 6.00%
2	What is India's population for the year 2011?	76	62	62	1.1 billion crore, 10 billion, 10 million, 10.1 million, 12.5 billion, 120 million, 123 million, 150 million, 30 million, 8 million, 3 billion
3	What is India's per capita income for the year 2011 in US dollars?	2	42	156	$100, $120, $15, $3,000, $250, $50, $25, $6, $7.6 billion, $70, $1500000
4	What is India's saving to GDP ratio?	16	46	138	0%, 1.2 billion, 1.25%, 1.8%, 10%, 10,00,000, 11%, 12%, 4%, 40%, 45%, 5.3%, 50%, 6%, 7%, little
5	Write the contributions of primary, secondary and tertiary sectors in the Indian GDP				
	Primary	31	56	113	
	Secondary	29	50	121	
	Tertiary	17	65	118	

was through screening/filtering entrance tests (NET/SET for teaching positions, UPSC and probationary officer bank examinations). Therefore, unlike Dore's hypothesis of learning for the sake of getting a job, the real-time variation was that of learning only what fulfilled the eligibility criteria for it. Even as students prepared for the entrance tests, they had a foot in the educational track as well. With jobs remaining elusive, a massive bout of educational inflation ran parallel to the employment quest.

In the meantime, the near-absent forward linkages with the employment market had not gone unnoticed in postgraduate, even graduate, classrooms of economics. As mentioned earlier, attendance across colleges was abysmal. Students in some cases could be disillusioned with what was being taught in the class. But some of them were busy trying to gain meaningful work experience (in petty sales and marketing jobs, business process outsourcing [BPO], and the like). When Dore writes of education and employment, quite rationally, he presumes them to be mutually exclusive tracks, with one following the other. But he does not factor in the mutation of chronic classroom absenteeism that circumvents this logic. The educational system, by turning a blind eye to it, enables students to run simultaneously on both tracks. A full-time working student ran the risk of forfeiting a few marks (if at all) compared to an "actual" full-time student attending classes. Instead of scoring 70%, s/he may get some 65% or thereabouts. But it was a risk worth taking. What is more, it was a far lesser price to pay than studying arts for art's sake.

REFERENCES

Ashton David, Francis Green, Donna James and Johnny Sung (1999): *Education for Development and Training in East Asia*, London and New York: Routledge.

Becker, Gary (1964): *Human Capital*, Chicago: University of Chicago Press.

Blaug, Mark (2003): "The Formalist Revolution of the 1950s," *Journal of the History of Economic Thought*, Vol 25 (3), pp 145–56.

Bray, Mark (2007): *The Shadow Education System: Private Tutoring and Its Implications for Planners*, Paris: UNESCO.

Clark, Cal and K C Roy (1997): *Comparing Development Patterns in Asia*, London: Lynne Rienner Publishers.

Collins, Randall (2002): "Credentials Inflation and the Future of Universities," *The City of Intellect: The Changing American University*, Steven Brint (ed), Stanford University Press.

Cooksey, Brian and Sibylle Riedmiller (1997): "Tanzanian Education in the Nineties: Beyond the Diploma Disease," *Assessment in Education*, Vol 4 (1), pp 121–36.

Deshpande, Satish (2002): "Social Science Research Capacity in South Asia," *Economic & Political Weekly*, Vol 37 (35), pp 3628–30.

Dore, Ronald (1976): *The Diploma Disease: Education, Qualification and Development*, London: George Allen and Unwin.

— (1980): "The Diploma Disease Revisited," *IDS Bulletin*, Vol 11 (2), Sussex: Institute of Development Studies.

— (1997): "The Argument of the Diploma Disease: A Summary," *Assessment in Education*, Vol 4 (1), pp 23–32.

Dreze, Jean and Amartya Sen (2013): *An Uncertain Glory: India and Its Contradictions*, Allen Lane.

Guha, Ramchandra (2008): "Autonomy and Ideology," *Economic & Political Weekly*, Vol 43 (5), pp 33–35.

Hodgson, Geoffrey (2004): "On the Problem of Formalism in Economics," *Post Autistic Economics Review*, Issue 28, 25 Oct.

ICSSR (2007): "Report of the Fourth Review Committee," New Delhi: Indian Council of Social Science Research.

James, Mark (1998): "Review: The Diploma Disease, Twenty Years On," *Comparative Education*, Vol 34 (3), pp 356–57.

Kingdon, Geeta (1996): "Private Schooling in India: Size, Nature and Equity-Effects," *Economic & Political Weekly*, Vol 31 (51), pp 3306–14.

Kremer, Michael, Nazmul Chaudhury, F Halsey Rogers, Karthik Muralidharan and Jeffrey Hammer (2005): "Teacher Absence in India: A Snapshot," *Journal of the European Economic Association*, Vol 3 (2-3), pp 658–67.

Krishna, Venni and Usha Krishna (2010): "Social Sciences in South Asia," in *World Social Science Report: Knowledge Divides*, Paris: UNESCO, pp 77–81.

Little, Angela and Jasbir Sarjit Singh (1992): "Learning and Working: Elements of the Diploma Disease Thesis Examined in England and Malaysia," *Comparative Education*, Vol 28 (2), pp 181–200.

Little, Angela (2003): "Motivating Learning and the Development of Human Capital," *Compare: A Journal of Comparative and International Education*, Vol 33 (4), pp 437–52.

— (2006): "Diploma Disease," *Elgar Companion to Development Studies*, David Clarke (ed), Edward Elgar, pp 121–26.

Majumdar, Manabi and Jos Mooij (2012): "The Marks Race: India's Dominant Education Regime and New Segmentation," *School Education, Pluralism and Marginality: Comparative Perspectives*, Christine Sleeter, Shashi Bhushan Upadhyay, Arvind Mishra and Sanjay Kumar (eds), New Delhi: Orient Blackswan, pp 207–46.

Pandey, Priyanka, Sangeeta Goyal and Venkatesh Sundararaman (2010): "Public Participation, Teacher Accountability and School Outcomes in Three States," *Economic & Political Weekly*, Vol 45 (24), pp 75–83.

Pritchett, Lant and Rukmini Banerji (2013): "Schooling Is Not Education: Using Assessment to Change the Politics of Non-learning," Center for Global Development, www.cgdev.org/publication/schooling-is-not-education

Schultz, Theodore (1961): "Investment in Human Capital," *American Economic Review*, Vol 51 (1), pp 1–17.

Sen, Amartya (2005): "The Country of First Boys," *The Little Magazine*, Vol 6, Issue 1 and 2, p 10.

Somerset, Anthony (1997): "Treating the Diploma Disease in Kenya: A Modest Counter Proposal," *Assessment in Education*, Vol 4 (1), pp 91–106.

Tobias, Sheila (1993): *Overcoming Math Anxiety*, New York: Norton.

Tooley, James and Pauline Dixon (2006): 'De facto Privatisation of Education and the Poor: Implications of a Study from Sub-Saharan Africa and India," *Compare*, Vol 36 (4), pp 443–46.

Vaidyanathan, A (2001): "Social Science Research in India: Some Emerging Issues," *Economic & Political Weekly*, Vol 36 (2), pp 112–14.

— (2008): "An Overview," *Economic & Political Weekly*, Vol 43 (5), pp 21–24.

Van der Gaag, Jacques and Anda Adams (2010): "Where Is the Learning: Measuring Schooling Efforts in Developing Countries," Policy Brief 2010–04, Washington DC: Brookings Institution.

Wang, Xueli (2013): "Why Students Choose Stem Subjects: Motivation, High-School Learning, and Postsecondary Context of Support," *American Educational Research Journal*, Vol 50 (5), pp 1081–21.

World Bank (2012): "Putting Higher Education to Work: Skills and Research for Growth in East Asia," Washington DC: World Bank.